Psychology Units 3 & 4

Practice Examinations

Aboriginal and Torres Strait Islander content has been excluded as accuracy cannot be guaranteed, and it is better to be respectful than cover the entire curriculum inaccurately.

Significant effort has been made to ensure this content is legal. Please send any areas of concern to admin@vwx.au with appropriate document/legal references so errors can be verified and changes be made.

Contents

Practice Examination 1

Reading time: 15 minutes. Writing time: 2 hours 30 minutes.

Section A consists of 40 multiple-choice questions and is worth 40 marks. Section B is worth 80 marks. Total 120 marks. No calculator, no notes, and no formula or data sheet are permitted.

Section A

Instructions for Section A. Answer all questions on the multiple-choice answer sheet. Choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. No mark is deducted for an incorrect answer. No mark is given if more than one answer is completed for any question. Diagrams and tables are not necessarily drawn to scale.

Question 1

A neurotransmitter is best described as a chemical that:

A. is carried in the bloodstream to organs throughout the body

B. forms the fatty coating around the axon of a neuron

C. carries a message across the synapse from one neuron to the next

D. is stored in the spinal cord until a reflex is triggered

Question 2

Which division of the nervous system carries messages that control the skeletal (voluntary) muscles?

A. the somatic nervous system

B. the sympathetic nervous system

C. the parasympathetic nervous system

D. the central nervous system

Question 3

When a person steps on a sharp stone, the foot is pulled away before the brain registers the pain. This rapid, automatic response is best described as:

A. a response controlled by the parasympathetic nervous system

B. a response learned through operant conditioning

C. a response produced by adrenaline released into the bloodstream

D. a spinal reflex, which the spinal cord initiates without waiting for the brain

Question 4

Which of the following is best classified as an internal stressor?

A. a noisy household

B. a person's own perfectionist expectations of themselves

C. a deadline set by an employer

D. a crowded train carriage

Question 5

The hormone released by the adrenal glands during the stress response, and often used as a physiological measure of stress, is:

A. cortisol

B. melatonin

C. dopamine

D. serotonin

Question 6

The gut–brain axis is best described as:

A. the one-way control of the gut by the brain

B. the part of the brain that controls hunger only

C. the two-way communication between the gut and the brain, partly carried by the vagus nerve

D. a hormone released during the alarm-reaction stage of stress

Question 7

According to Selye's General Adaptation Syndrome, if a stressor continues for a very long time the body eventually reaches a stage in which its resources are depleted and it becomes more vulnerable to illness. This stage is the:

A. alarm-reaction stage

B. resistance stage

C. appraisal stage

D. exhaustion stage

Question 8

In Lazarus and Folkman's Transactional Model of Stress and Coping, deciding whether an event is stressful — for example, judging it to be a threat — takes place during:

A. primary appraisal

B. secondary appraisal

C. the alarm reaction

D. approach coping

Question 9

For classical conditioning to occur, the neutral stimulus must be:

A. presented immediately after the unconditioned response

B. presented shortly before the unconditioned stimulus, on repeated occasions

C. an unpleasant stimulus that is removed once the behaviour occurs

D. a reward given only after the desired behaviour has been performed

Question 10

A driver caught speeding has their licence suspended for three months. Afterwards the driver speeds far less often. This consequence is an example of:

A. positive reinforcement

B. negative reinforcement

C. positive punishment

D. negative punishment

Question 11

In observational learning, the stage in which the learner stores a mental representation of the modelled behaviour so it can be recalled later is:

A. attention

B. retention

C. reproduction

D. motivation

Question 12

In observational learning, a learner becomes more likely to reproduce a behaviour after seeing the model rewarded for it. This is best described as:

A. negative reinforcement

B. positive punishment

C. vicarious reinforcement

D. a conditioned response

Question 13

Long-term potentiation (LTP), a proposed biological mechanism of memory, is best described as the:

A. long-lasting strengthening of the connection between two neurons after repeated stimulation

B. long-lasting weakening of the connection between two neurons after repeated stimulation

C. permanent loss of stored memories following damage to the brain

D. growth of entirely new neurons to replace those lost with age

Question 14

A student remembers a list of items by making a word out of the first letter of each item. This memory technique is best described as:

A. the method of loci

B. maintenance rehearsal

C. an acrostic

D. an acronym

Question 15

The amygdala is most associated with:

A. coordinating balance and voluntary movement

B. attaching emotional significance, such as fear, to memories

C. producing the hormone melatonin

D. regulating breathing rate and heart rate

Question 16

Knowing what the word "photosynthesis" means, with no memory of the lesson in which you learned it, is an example of:

A. episodic memory

B. autobiographical memory

C. semantic memory

D. procedural memory

Question 17

A person with aphantasia is likely to have difficulty:

A. forming voluntary mental images ("seeing" a picture in the mind)

B. remembering the meanings of words

C. staying awake during the day

D. moving their skeletal muscles

Question 18

Sleep is best classified as:

A. a state of normal waking consciousness

B. an induced altered state of consciousness caused by a drug

C. total unconsciousness, with no brain activity

D. a naturally occurring altered state of consciousness

Question 19

A 16-year-old regularly cannot fall asleep until about 2 am and finds it very hard to wake for school, but sleeps normally when free to choose their own hours during the holidays. This pattern is most characteristic of:

A. advanced sleep phase disorder

B. a normal ultradian rhythm

C. sleep deprivation caused by drinking caffeine late at night

D. delayed sleep phase syndrome

Question 20

A person is in bed for nine hours but wakes many times through the night. This person is best described as having:

A. good sleep quality but poor sleep quantity

B. poor sleep quality and poor sleep quantity

C. adequate sleep quantity but poor sleep quality

D. total sleep deprivation

Question 21

In a sleep study, the device used to measure the electrical activity produced by movement of the eyes is the:

A. electroencephalograph (EEG)

B. electro-oculograph (EOG)

C. electromyograph (EMG)

D. sleep diary

Question 22

A circadian rhythm is a biological rhythm that occurs over a cycle of approximately:

A. 24 hours

B. 90 minutes

C. 7 days

D. one month

Question 23

The suprachiasmatic nucleus (SCN) helps regulate the sleep–wake cycle mainly by controlling the release of the hormone:

A. cortisol from the adrenal glands

B. melatonin from the pineal gland

C. adrenaline from the hypothalamus

D. dopamine from the amygdala

Question 24

Which of the following is the most important zeitgeber (external cue) for keeping the human circadian rhythm synchronised to a 24-hour day?

A. light

B. internal body temperature

C. hunger

D. melatonin

Question 25

Compared with an adult, a newborn baby typically spends:

A. almost no time in REM sleep

B. exactly the same proportion of time in REM sleep

C. a much greater proportion of sleep time in REM sleep

D. all of its sleep time in deep, slow-wave sleep

Question 26

Research suggests that going without sleep for about 17 hours can impair concentration and performance to a level similar to a blood alcohol concentration (BAC) of about:

A. 0.00

B. 0.05

C. 0.15

D. 0.30

Question 27

Which of the following best distinguishes a specific phobia from everyday anxiety?

A. anxiety involves a physical response, whereas a phobia does not

B. a phobia occurs only in people with a family history of mental illness

C. a phobia always disappears without treatment within a few weeks

D. a phobia is a persistent, intense and irrational fear of a particular object or situation that significantly interferes with daily functioning

Question 28

In considering a person's mental wellbeing, their level of functioning refers to:

A. the number of hours they sleep each night

B. how quickly their heart rate returns to normal after exercise

C. how well they can carry out the tasks and activities of everyday life

D. whether they have ever experienced a stressful life event

Question 29

For Aboriginal and Torres Strait Islander peoples, cultural continuity — the passing on of knowledge, language and connection to Country across generations — is best described as:

A. a protective cultural determinant that supports social and emotional wellbeing

B. a risk factor that reduces social and emotional wellbeing

C. a type of circadian rhythm sleep disorder

D. a neurotransmitter involved in the stress response

Question 30

Having supportive family and friends to turn to in difficult times is best classified as a protective factor that is:

A. biological

B. social (external)

C. psychological only

D. a risk factor

Question 31

One biological contributor to the development of a specific phobia is:

A. an increase in melatonin production

B. a secure attachment to a caregiver

C. repeated praise for facing the feared object

D. a dysfunction in GABA that reduces its calming (inhibitory) effect

Question 32

For some people with a specific phobia, stigma around seeking treatment contributes to the phobia by:

A. reducing the amount of GABA released at the synapse

B. increasing the length of their REM sleep

C. discouraging them from seeking help, so their avoidance continues

D. making the person's fear response less intense over time

Question 33

In the psychological explanation of specific phobia, catastrophic thinking is understood to:

A. maintain or worsen the phobia by exaggerating the threat

B. cause the phobia to first develop

C. cure the phobia over time

D. have no effect on the phobia

Question 34

In cognitive behavioural therapy for a specific phobia, the cognitive component works mainly by helping the person to:

A. recall every past encounter with the feared object in detail

B. identify and challenge unrealistic thoughts about the feared object

C. take medication that increases the effect of GABA

D. rely on family members to handle the feared situation for them

Question 35

Breathing retraining helps to manage the physical symptoms of a phobic response by teaching the person to:

A. hold their breath until the fear passes

B. breathe rapidly to increase the oxygen reaching the brain

C. leave the situation as soon as their breathing quickens

D. breathe slowly and evenly, correcting over-breathing and lowering physiological arousal

Use the following information to answer Questions 36–38.

A psychologist tests whether listening to calming music before bed helps people fall asleep faster. She randomly allocates 60 adult volunteers to two groups. One group listens to 10 minutes of calming music while lying in bed; the other group lies in bed in silence. She records how many minutes each person takes to fall asleep.

Question 36

The independent variable in this study is:

A. the number of minutes taken to fall asleep

B. whether the person listens to calming music or lies in silence

C. the 60 adult volunteers

D. the time of night the study is run

Question 37

The dependent variable, and how it is measured (operationalised), is:

A. the time taken to fall asleep; measured in minutes

B. the type of music; measured in decibels

C. sleep quality; measured with an EEG

D. the group allocation; measured by a coin toss

Question 38

In this study, the main purpose of allocating the volunteers to the two groups at random is to:

A. make sure the sample is representative of the whole population

B. guarantee that every participant falls asleep faster

C. decide which of the two groups will be tested first

D. spread participant differences evenly across the two groups, so they are unlikely to explain any difference in the results

Question 39

A psychologist studies the sleep patterns of a single person with a rare sleep disorder in great detail over two years. This investigation methodology is best described as:

A. a controlled experiment

B. a correlational study

C. a case study

D. a literature review

Question 40

In research ethics, the concept of beneficence requires researchers to:

A. use the largest possible sample in every study

B. ensure that the results can be generalised to the whole population

C. maximise the benefits of the research while minimising the risk of harm to participants

D. repeat the study at least three times before publishing it

End of Section A

Section B

Instructions for Section B. Answer all questions in the spaces provided. Where more than one mark is available, marks are awarded for the depth the command term and mark allocation require. The final question is marked against the assessment criteria at the end of this section.

Question 1 (8 marks)

While walking home, Dev hears a sudden loud bang behind him. Before he is even aware of it, he flinches and his hand jerks upward. A moment later his heart is pounding, his breathing is fast, and he feels "on edge".

a. Identify the two structures that make up Dev's central nervous system. 1 mark

b. Dev's flinch occurs before he is aware of the bang. Distinguish between a conscious and an unconscious response, and state which one the flinch is. 3 marks

c. Name the division of the autonomic nervous system that produces Dev's pounding heart and rapid breathing, and describe two other physiological changes this division would cause. 3 marks

d. Identify the neurotransmitter that has the main excitatory effect in the nervous system. 1 mark

Question 2 (8 marks)

To help her puppy, Biscuit, settle in the evening, Priya rings a small bell and then immediately gives Biscuit a treat. After two weeks, Biscuit's mouth waters as soon as the bell rings, before any treat appears. Priya also notices that when Biscuit sits quietly and she praises him, he sits quietly more often.

a. The bell-and-treat training is an example of classical conditioning. Identify the unconditioned stimulus, the conditioned stimulus and the conditioned response in this scenario. 3 marks

b. Explain why the watering of Biscuit's mouth in response to the bell is a conditioned response rather than an unconditioned response. 2 marks

c. When Priya praises Biscuit for sitting quietly and he then sits quietly more often, name precisely the type of operant conditioning consequence involved. 1 mark

d. Explain how this consequence increases the likelihood of Biscuit sitting quietly. 2 marks

Question 3 (10 marks)

Mr Alberti has Alzheimer's disease. He can no longer form new long-term memories of recent events — for example, he cannot remember a nurse he met an hour ago — but he can still ride a stationary exercise bike smoothly, a skill he learned many years ago.

a. Name the three components of the Atkinson–Shiffrin multi-store model of memory, in the order that information moves through them. 2 marks

b. State the capacity and the duration of short-term memory according to this model. 2 marks

c. Mr Alberti cannot form new memories of recent events. Name the brain region most associated with forming new explicit long-term memories. 1 mark

d. Mr Alberti can still ride the exercise bike smoothly. Identify the type of long-term memory this riding skill is an example of, and name one brain region involved in this type of memory. 2 marks

e. Explain why Mr Alberti's ability to still ride the bike, despite being unable to form new memories, shows that long-term memory is not a single unified store. 3 marks

Question 4 (10 marks)

A sleep scientist monitors a healthy 20-year-old, Tomas, overnight using three devices that record his brain waves, eye movements and muscle activity. The table below shows readings from two different periods of his sleep.

Measure	Period X	Period Y
Brain waves (EEG)	slow, high-amplitude (delta) waves	fast, low-amplitude waves, similar to being awake
Eye movement (EOG)	very little	rapid movements
Muscle activity (EMG)	some muscle tone	very low (muscles relaxed)

a. Name the device used to measure Tomas's brain-wave activity, and state what electrical activity it detects. 2 marks

b. Using the table, identify whether Period Y is REM or NREM sleep, and justify your answer with one piece of evidence from the table. 2 marks

c. Identify the stage of sleep occurring in Period X, and state whether it is light or deep sleep. 2 marks

d. Sleep is described as an altered state of consciousness. Describe one way Tomas's consciousness during sleep differs from his normal waking consciousness. 2 marks

e. Tomas later takes a job on permanent night shift and struggles to sleep during the day. Name the circadian rhythm sleep disorder this describes, and identify one treatment that uses light to help shift his sleep–wake cycle. 2 marks

Question 5 (8 marks)

A Psychology class investigates whether doing 5 minutes of exercise improves memory. Twenty students are randomly allocated to two groups. Group 1 does 5 minutes of star jumps; Group 2 sits quietly for 5 minutes. Both groups then have 60 seconds to memorise a list of 20 words and are tested on how many they can recall. The results are shown below.

Group	n	Mean words recalled	SD
Group 1 (5 min exercise)	10	14.0	1.5
Group 2 (5 min quiet rest)	10	10.0	1.8

a. Identify the independent variable and the dependent variable in this investigation. 2 marks

b. Write a directional hypothesis for this investigation. 2 marks

c. Calculate the percentage difference between the mean number of words recalled by Group 1 and Group 2, relative to Group 2. 1 mark

d. The class concludes that "exercise improves memory in all people". Explain one reason why this conclusion is not justified. 2 marks

e. Identify one ethical guideline the class should follow in this study. 1 mark

Question 6 (8 marks)

After moving to a new town, Leila feels lonely and anxious. Over several months she joins a sports club, starts sleeping regularly, and learns to challenge her worried thoughts. She says she now feels able to cope with the ups and downs of the move.

a. Explain what it means to describe mental wellbeing as existing on a continuum. 2 marks

b. Using the biopsychosocial approach, classify each of Leila's three changes — sleeping regularly, challenging worried thoughts, and joining a sports club — as a biological, psychological or social protective factor. 3 marks

c. Leila says she now feels able to cope with the ups and downs of the move. Define resilience. 1 mark

d. Explain how one of Leila's changes acts to protect her mental wellbeing. 2 marks

Question 7 (10 marks)

Sam has a specific phobia of escalators. It began when Sam's foot was caught at the top of a moving escalator as a young child and Sam fell. Now, even the sound of an escalator makes Sam's heart race, and Sam has started avoiding any shopping centre that has one, which brings immediate relief. A psychologist designs the following fear hierarchy as part of Sam's treatment.

Step	Situation	Fear rating (0–10)
1	Looking at a photograph of an escalator	2
2	Watching a video of people riding an escalator	4
3	Standing at the bottom of a switched-off escalator	6
4	Standing beside a moving escalator, watching others ride it	8
5	Riding an escalator to the next floor	10

a. Sam's phobia began after the fall. Name the type of conditioning that explains how the escalator (initially neutral) came to trigger fear. 1 mark

b. Avoiding escalators brings Sam immediate relief. Explain how this avoidance perpetuates (maintains) the phobia, using the idea of negative reinforcement. 3 marks

c. Name the intervention that uses a fear hierarchy like the one shown, paired with relaxation. 1 mark

d. Using the hierarchy, explain how this intervention would be carried out. 3 marks

e. One biological treatment for the anxiety of a phobia is a benzodiazepine (a GABA agonist). Explain how a GABA agonist reduces anxiety. 2 marks

Question 8 (8 marks)

A Year 12 student is comparing two memory techniques for learning a long, ordered list: the method of loci (imagining items placed along a familiar route) and the use of songlines, a memory practice of many Aboriginal peoples that links knowledge to journeys across Country.

a. Describe how the method of loci helps a person remember an ordered list. 2 marks

b. Explain how songlines are used by many Aboriginal peoples to store and recall large amounts of information. 3 marks

c. Identify one feature that the method of loci and songlines have in common. 1 mark

d. Aboriginal and Torres Strait Islander ways of knowing understand learning as embedded in community and Country. Describe one way this differs from learning a list alone from a textbook. 2 marks

Question 9 (10 marks)

Marcus has just started the first year of an apprenticeship. He is expected to learn new tasks quickly, works long hours, and worries each night about making mistakes. In the first few weeks his heart raced and he felt "wired" whenever he arrived at work. After a couple of months he felt constantly tired and run down, and caught every cold going around. Marcus decides to deal with the pressure by avoiding the harder tasks and calling in sick on busy days, which makes him feel better in the moment but means he falls further behind.

As part of a workplace wellbeing program, every apprentice completes a short self-report survey at the end of each month. Marcus's results for his first three months are shown below.

Month	Self-reported stress (0 = none, 10 = extreme)	Self-reported energy (0 = none, 10 = very high)	Days absent from work
1	8	7	0
2	7	4	1
3	8	1	4

Analyse Marcus's experience of stress and his attempt to cope with it. In your response, use Selye's General Adaptation Syndrome to explain how his body responds to the ongoing stress of the apprenticeship, apply Lazarus and Folkman's Transactional Model of Stress and Coping to his situation, and evaluate how effective his chosen coping strategy is likely to be. Refer to the data in the table, including what it does and does not show.

Your response to Question 9 will be assessed against the assessment criteria for the 10-mark extended-response question.

End of Section B

End of examination questions

Section A — answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	11	B	21	B	31	D
2	A	12	C	22	A	32	C
3	D	13	A	23	B	33	A
4	B	14	D	24	A	34	B
5	A	15	B	25	C	35	D
6	C	16	C	26	B	36	B
7	D	17	A	27	D	37	A
8	A	18	D	28	C	38	D
9	B	19	D	29	A	39	C

Q	Ans	Q	Ans	Q	Ans	Q	Ans
10	D	20	C	30	B	40	C

Q1. C — a neurotransmitter is a chemical released by one neuron that crosses the synapse and binds to the next neuron; hormones travel in the bloodstream and myelin forms the axon's fatty coating. **Q2.** A — the somatic nervous system carries motor messages to the skeletal (voluntary) muscles; the autonomic divisions control involuntary organs. **Q3.** D — pulling the foot away before the pain is felt is a spinal reflex, initiated by the spinal cord without waiting for the brain, which is why it is so fast. **Q4.** B — an internal stressor originates within the person (their own thoughts, expectations or health); a noisy household, an employer's deadline and a crowded train are all external stressors. **Q5.** A — cortisol is released by the adrenal glands during the stress response and, because its level tracks stress, it is widely used as a physiological measure of it; melatonin, dopamine and serotonin are not adrenal stress hormones. **Q6.** C — the gut–brain axis is the two-way communication between the gut and the brain, carried partly by the vagus nerve. **Q7.** D — in the exhaustion stage of the General Adaptation Syndrome the body's resources are depleted after prolonged stress, increasing vulnerability to illness. **Q8.** A — deciding whether an event is stressful (for example, a threat) is primary appraisal; secondary appraisal evaluates one's coping resources. **Q9.** B — acquisition requires the NS to be presented shortly *before* the UCS and the pairing to be repeated; options C and D describe operant consequences, not classical conditioning. **Q10.** D — the licence is a valued (pleasant) stimulus that is *removed*, and the behaviour *decreases*, so this is negative punishment, or response cost; punishment always decreases the behaviour. **Q11.** B — retention is the stage in which a mental representation of the modelled behaviour is stored for later recall. **Q12.** C — seeing the model rewarded is vicarious reinforcement: the observer is reinforced indirectly and so is more motivated to reproduce the behaviour. **Q13.** A — LTP is the long-lasting *strengthening* of a synaptic connection following *repeated* stimulation; long-term depression is the weakening that follows *low* levels of stimulation. **Q14.** D — forming a word from the first letters is an acronym; an acrostic makes a phrase or sentence from them, and the method of loci uses locations rather than letters. **Q15.** B — the amygdala attaches emotional significance, especially fear, to memories. **Q16.** C — a general fact or word meaning recalled without its learning context is semantic memory; episodic and autobiographical memories are tied to personal events. **Q17.** A — aphantasia is difficulty (or an inability) forming voluntary mental images. **Q18.** D — sleep is a naturally occurring altered state of consciousness; it is not drug-induced and brain activity continues throughout. **Q19.** D — a sleep–wake cycle shifted persistently later, which is normal when the person is free to choose their own hours, is delayed sleep phase syndrome; advanced sleep phase disorder shifts it earlier. **Q20.** C — nine hours in bed is an adequate *quantity* of sleep, but repeated waking fragments it, so the *quality* is poor; quantity and quality are separate measures and one can be adequate without the other. **Q21.** B — the electro-oculograph (EOG) records the electrical activity of eye movements. **Q22.** A — a circadian rhythm cycles over about 24 hours. **Q23.** B — the SCN regulates the sleep–wake cycle by controlling melatonin release from the pineal gland. **Q24.** A — light is the primary external zeitgeber that synchronises the circadian rhythm; temperature and melatonin act as internal cues. **Q25.** C — newborns spend a much greater proportion of their sleep in REM than adults do. **Q26.** B — around 17 hours awake impairs performance to a level comparable with a BAC of about 0.05. **Q27.** D — a specific phobia is persistent, intense and out of proportion to the actual danger, and it significantly disrupts daily functioning; everyday anxiety is milder, more general and not disabling. **Q28.** C — level of functioning refers to how well a person manages the ordinary demands of daily life (work, study, relationships and self-care). **Q29.** A — cultural continuity is a protective cultural determinant that supports social and emotional wellbeing. **Q30.** B — supportive family and friends are a social (external) protective factor. **Q31.** D — reduced GABA function lessens its inhibitory (calming) effect and is a biological contributor to specific phobia. **Q32.** C — stigma is a *social* contributor: fear of being judged deters help-seeking, so the person keeps avoiding the feared stimulus and the phobia is maintained. **Q33.** A — catastrophic thinking maintains or worsens a phobia by exaggerating the threat; it is not the original cause. **Q34.** B — the cognitive component of CBT targets the unrealistic, threat-exaggerating thoughts that sustain the phobia, teaching the person to identify them and replace them with realistic appraisals. **Q35.** D — breathing retraining corrects the rapid, shallow over-breathing of a phobic response, restoring normal gas exchange and lowering physiological arousal. **Q36.** B — the independent variable is what the researcher manipulates: listening to calming music versus lying in silence. **Q37.** A — the dependent variable is the time taken to fall asleep, operationalised in minutes. **Q38.** D — random allocation distributes participant differences evenly between the groups so they are unlikely to explain the results; it is random *sampling* that addresses how representative a sample is. **Q39.** C — the in-depth investigation of a single individual (or a very small group) over time is a case study; no variable is manipulated, so it is not a controlled experiment. **Q40.** C — beneficence is the commitment to maximising benefits and minimising harm; the other options describe methodological aims, not ethical concepts.

Section B — solutions

Q1. (a) Dev's central nervous system is made up of the **brain** and the **spinal cord**. (b) A **conscious response** involves awareness of the stimulus and is usually deliberate and coordinated by the brain, whereas an **unconscious response** occurs **without awareness** and is automatic. Dev's flinch happens *before* he is aware of the bang, so it is an **unconscious response** (a reflexive startle reaction). (c) The **sympathetic** division of the autonomic nervous system produces his pounding heart and rapid breathing. Two other changes it would cause (name any two): **dilated pupils**, **release of glucose and adrenaline to provide energy**, **slowed digestion**, or **increased sweating**. (d) **Glutamate** is the main excitatory neurotransmitter.

Q2. (a) The **unconditioned stimulus (UCS)** is the **treat (food)**; the **conditioned stimulus (CS)** is the **bell**; the **conditioned response (CR)** is **salivation (Biscuit's mouth watering) to the bell**. (b) Salivating to food is automatic and unlearned (an unconditioned response), but salivating to the **bell** only appears **after the bell has been repeatedly paired with the treat**. Because it is a **learned** response to a previously neutral stimulus, it is a **conditioned** response, not an unconditioned one. (c) **Positive reinforcement**. (d) Praise is a **pleasant stimulus that is added** immediately after Biscuit sits quietly; because this consequence is rewarding, it **increases the likelihood** that the behaviour of sitting quietly will be repeated in future.

Q3. (a) **Sensory memory → short-term memory → long-term memory** (information moves through the stores in that order). (b) Short-term memory has a capacity of about **7 ± 2 (5–9) items** and a duration of about **12–30 seconds** without rehearsal. (c) The **hippocampus**. (d) The riding skill is a **procedural (implicit) memory**; a brain region involved is the **cerebellum** (the **basal ganglia** is also acceptable). (e) Forming new memories of recent events depends on the **hippocampus**, which is damaged in Alzheimer's disease, so Mr Alberti cannot store new **explicit (declarative)** memories. However, his **procedural** memory for riding the bike relies on **different structures (the cerebellum and basal ganglia)** that remain intact, so this skill is preserved. Because one type of long-term memory can be lost while another is retained, long-term memory must be made up of **separate systems served by different brain regions**, not a single unified store.

Q4. (a) The **electroencephalograph (EEG)**; it detects and records the **electrical activity of the brain** (the combined firing of many neurons), shown as brain-wave frequency and amplitude. (b) Period Y is **REM sleep**. Justification (any one): the EOG shows **rapid eye movements**, the EEG shows **fast, low-amplitude waves similar to being awake**, and muscle tone is **very low** — all characteristic of REM. (c) Period X is **NREM Stage 3**; it is **deep sleep** (slow, high-amplitude delta waves). (d) During sleep Tomas has **reduced awareness of his surroundings** (accept also: reduced control of his thoughts and actions, or a distorted sense of time) compared with the full awareness and control of normal waking consciousness. (e) **Shift work (sleep) disorder**; **bright light therapy** uses timed exposure to bright light to shift his circadian rhythm so it aligns with his new sleep schedule.

Q5. (a) The **independent variable** is whether a student does **5 minutes of exercise (star jumps) or sits quietly for 5 minutes**; the **dependent variable** is the **number of words recalled** from the 20-word list. (b) *It is hypothesised that students who do 5 minutes of exercise before memorising a word list will recall more words, on average, than students who sit quietly for 5 minutes.* (This names the population, both IV levels and a directional, measured DV.) (c) Percentage difference $= \frac{14.0 - 10.0}{10.0} \times 100 = 40\,\%$ — Group 1 recalled **40% more** words on average than Group 2. (d) The conclusion is not justified because the sample is **small (20 students) and drawn from a single class**, so it is **not representative** of "all people"; the result can only be generalised to a similar population, not to everyone. (Also acceptable: it is a single study that has not yet been repeated or reproduced.) (e) Any one of: **informed consent** (with parental consent for students under 18), **voluntary participation**, **withdrawal rights**, or **confidentiality**.

Q6. (a) Describing mental wellbeing as a **continuum** means it is not "all or nothing": a person sits **somewhere along a scale** ranging from high wellbeing through to serious difficulty, and can **move back and forth** along that scale over time as their circumstances change. (b) Sleeping regularly = **biological**; challenging her worried thoughts = **psychological**; joining a sports club = **social**. (c) **Resilience** is the ability to **cope with, adapt to and recover from stress, change and uncertainty**. (d) *Example (any one change, with a mechanism):* joining a sports club provides **social support** — people to talk to and rely on — which buffers the effects of stress and reduces her loneliness, protecting her wellbeing. (Regular sleep restores biological functioning; challenging worried thoughts reduces unhelpful, anxious cognitions — either, correctly explained, is creditworthy.)

Q7. (a) **Classical conditioning**. (b) When Sam avoids escalators, the **fear and anxiety are removed**, producing **immediate relief**. Because an unpleasant state is **taken away**, this relief acts as a **negative reinforcer**, so the **avoidance behaviour is strengthened** and repeated. As Sam keeps avoiding escalators, they never get the chance to learn that an escalator can be ridden safely, so the phobia is **maintained (perpetuated)** rather than reduced — this is operant conditioning at work. (c) **Systematic desensitisation**. (d) Sam is first taught a **relaxation technique**. Then, staying relaxed, Sam works **up the fear hierarchy from the least-feared step (looking at a photograph of an escalator, rated 2) toward the most-feared step (riding an escalator to the next floor, rated 10)**, only moving on to the next step once they can stay relaxed at the current one. Pairing relaxation with each feared situation gradually **replaces the fear response with a calm one** (the fear and relaxation cannot occur at the same time), until even the top of the hierarchy no longer triggers the phobia. (e) A GABA agonist **mimics or enhances the action of GABA**, the main inhibitory neurotransmitter. This makes the receiving (postsynaptic) neurons **less likely to fire**, lowering neural excitability and **over-arousal**, which calms the anxiety.

Q8. (a) The method of loci works by **associating each item to be remembered with a specific location along a familiar route** (for example, rooms in one's home). To recall the list in order, the person **mentally "walks" the route** and retrieves each item from its place. (b) Songlines link knowledge — such as **routes, the locations of water and food, laws and stories** — to **features of the land along a journey across Country**, encoded in **song and narrative**. By singing or retelling the songline in sequence, a person can **recall large amounts of ordered information**, and because it is a shared, multimodal system (song, story, place and movement), the knowledge can be **passed accurately across generations**. (c) Both link information to a **sequence of places or locations along a journey** to support ordered recall. (Also acceptable: both attach the information to vivid, meaningful associations.) (d) For Aboriginal and Torres Strait Islander ways of knowing, learning is **embedded in community, relationships and connection to Country** — it is shared, oral and tied to place — whereas learning a list alone from a textbook is **individual, silent and separated from place and community**.

Assessment criteria for the 10-mark question

A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Holistic band guide (out of 10)

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly

Band	Marks	Descriptor
		accurate, well-applied terminology; clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little analysis or evaluation; assertion without evidence.
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Q9. *Model high-scoring response.*

Marcus is experiencing **chronic (ongoing) stress** — a state of psychological and physiological tension produced by a stressor (the demands of his apprenticeship) that he appraises as exceeding his resources.

Selye's General Adaptation Syndrome (GAS) describes the body's non-specific biological response to a persistent stressor across three stages, and both Marcus's account and his survey data map onto all three. In the first weeks, his racing heart and "wired" feeling reflect the **alarm-reaction stage**: his sympathetic nervous system triggers the fight-or-flight response and stress hormones, including **cortisol**, are released, briefly raising arousal and available energy. The Month 1 row fits this picture — his stress is already high (**8/10**) yet his energy is at its highest (**7/10**) and he has missed no work. As the stressor continues he moves into the **resistance stage**, in which cortisol remains elevated and the body works at a heightened level to cope: by Month 2 his stress rating has barely moved (**7/10**) but his energy has fallen to **4/10**, which is what "coping at a cost" looks like — the response is sustained while resources are steadily drained. By Month 3 the readings are those of the **exhaustion stage**: energy has collapsed to **1/10** while stress has returned to **8/10** and absences have risen to **four days**, matching his report of feeling "constantly tired and run down" and catching "every cold going around". His physiological resources are depleted and his immune system is suppressed by the prolonged high cortisol, leaving him vulnerable to illness. GAS is useful here because it explains this biological trajectory from acute arousal to exhaustion, and the *divergence* in the data — stress high throughout while energy falls steadily — is exactly the dissociation the model predicts. Its limitation is that, as a purely biological model, it does not account for how Marcus **thinks about** the stressor — which is where a psychological model adds value.

Lazarus and Folkman's Transactional Model of Stress and Coping treats stress as arising from the interaction between the person and their environment, mediated by appraisal. In **primary appraisal**, Marcus judges the apprenticeship as a **threat** (he worries each night about making mistakes). In **secondary appraisal**, he evaluates his coping options and concludes he cannot manage the harder tasks. Because he appraises the demands as outweighing his resources, the situation is experienced as stressful. His chosen response — avoiding the harder tasks and calling in sick — is an **avoidance coping strategy**: it moves him *away* from the stressor and reduces his awareness of it, rather than engaging with it.

Evaluating this strategy, avoidance is likely to be **effective only in the very short term**. Its one strength is that it delivers **immediate relief**, which (as negative reinforcement) is exactly why Marcus repeats it. However, it is **ineffective and even counter-productive in the long term** because it does nothing to address the source of the stress: Marcus "falls further behind", which *increases* the real demands of the apprenticeship and is likely to deepen the exhaustion that GAS predicts. It also prevents him from building competence or discovering that the tasks are

manageable. The data support this judgement: the **four days absent in Month 3** are the clearest trace of his avoidance, and they coincide with his **worst** energy reading and a stress rating no lower than in Month 1 — after three months the strategy has not reduced his stress at all. Because the effectiveness of a coping strategy is **context-specific**, the decisive question is whether the stressor is **controllable**. Marcus's largely is — he can ask a supervisor for help, break tasks into smaller steps, or negotiate more time — so an **approach strategy**, which engages with the stressor directly, fits this context far better than avoidance; avoidance is best reserved for stressors that genuinely cannot be changed. What Marcus most clearly lacks is **coping flexibility**: three months of unchanged stress ratings are precisely the signal that should have prompted him to monitor his strategy and switch to a different one.

The evidence itself must be treated with care. The table is **self-report data from a single person** at only **three time points**, with **no comparison group** of other apprentices, so it cannot show that the apprenticeship *caused* the change rather than something else in Marcus's life, and it cannot be generalised to apprentices in general. Self-ratings are **subjective** and sensitive to mood on the day, and "days absent" is only an **indirect** measure of avoidance — it does not separate genuine illness from avoidance. The data are therefore **consistent with** the GAS trajectory and with an ineffective coping strategy, but they do not on their own **establish** either.

Conclusion. Marcus shows the classic GAS progression from alarm through resistance to exhaustion under a chronic, threat-appraised stressor, and the survey data track that progression in his collapsing energy and rising absences. His avoidance coping — though momentarily relieving — is poorly matched to a controllable stressor and is likely to worsen both his performance and his wellbeing over time. Adopting approach strategies, together with the coping flexibility to switch to them, would better protect him from reaching exhaustion. ∴ on balance, his current strategy is an ineffective way to manage this particular stress.

Practice Examination 2

Reading time: 15 minutes. Writing time: 2 hours 30 minutes. Section A — 40 questions, 40 marks. Section B — 80 marks. Total 120 marks. No calculator; no notes; no formula or data sheet.

Section A: choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. Marks are not deducted for incorrect answers.

Section A

Question 1

The two main divisions of the human nervous system are the:

A. sympathetic and parasympathetic nervous systems

B. somatic and autonomic nervous systems

C. central and peripheral nervous systems

D. brain and the spinal cord

Question 2

The autonomic nervous system is a subdivision of the:

A. peripheral nervous system

B. central nervous system

C. somatic nervous system

D. spinal cord

Question 3

Which of the following is best described as an unconscious response?

A. choosing to raise your hand to ask a question

B. deciding to walk to the shop after school

C. writing your name at the top of an exam paper

D. the pupils of the eyes narrowing when a bright light shines on them

Question 4

During a medical check-up, a doctor taps the tendon just below a patient's kneecap and the lower leg kicks out automatically, without the patient deciding to move it. This response is best described as:

A. a conscious response coordinated by the brain

B. a spinal reflex coordinated by the spinal cord

C. a response of the parasympathetic nervous system

D. a voluntary response of the somatic nervous system

Question 5

The neurotransmitter GABA typically has:

A. an inhibitory effect, making the next neuron less likely to fire

B. an excitatory effect, making the next neuron more likely to fire

C. no effect on the next neuron

D. the effect of releasing cortisol into the bloodstream

Question 6

Dopamine and serotonin are best described as:

A. hormones released only during the fight-flight-freeze response

B. the two main divisions of the autonomic nervous system

C. types of spinal reflex

D. neuromodulators that influence brain activity and mental processes

Question 7

The hormone released over a prolonged period as part of the body's response to a chronic (long-term) stressor is:

A. melatonin

B. GABA

C. cortisol

D. glutamate

Question 8

The fight-flight-freeze response is triggered by activation of the:

A. parasympathetic nervous system

B. sympathetic nervous system

C. somatic nervous system

D. spinal cord acting on its own

Question 9

According to Selye's General Adaptation Syndrome, the three stages of the stress response occur in the order:

A. resistance, alarm reaction, exhaustion

B. exhaustion, resistance, alarm reaction

C. alarm reaction, exhaustion, resistance

D. alarm reaction, resistance, exhaustion

Question 10

In Lazarus and Folkman's Transactional Model of Stress and Coping, primary appraisal involves:

A. deciding whether a situation is a threat, harm/loss or challenge

B. deciding what coping resources are available

C. the release of cortisol by the adrenal glands

D. reaching the exhaustion stage of the stress response

Question 11

Before conditioning has taken place, the neutral stimulus produces:

A. the conditioned response

B. no relevant conditioned response

C. the unconditioned response

D. a stronger response than the unconditioned stimulus

Question 12

In operant conditioning, the three-phase (three-term) sequence used to analyse learning is:

A. before, during, after

B. attention, retention, reproduction

C. antecedent, behaviour, consequence

D. alarm, resistance, exhaustion

Question 13

A student gets out of bed each morning to switch off their loud, annoying alarm. Getting out of bed becomes more likely over time. Switching off the alarm is an example of:

A. negative reinforcement

B. positive reinforcement

C. positive punishment

D. negative punishment

Question 14

The five stages of observational learning are attention, retention, reproduction, motivation and:

A. consequence

B. punishment

C. acquisition

D. reinforcement

Question 15

Aboriginal and Torres Strait Islander ways of knowing view learning as:

A. a purely individual process, separate from community

B. embedded in relationships, with the learner part of a multimodal system of knowledge patterned on Country

C. based only on reinforcement and punishment

D. limited to information that has been written down

Question 16

The three stores of the Atkinson-Shiffrin multi-store model of memory are:

A. encoding, storage and retrieval

B. episodic, semantic and procedural memory

C. sensory memory, short-term memory and long-term memory

D. iconic, echoic and haptic memory

Question 17

Riding a bicycle is a well-learned skill that a person carries out automatically. The brain structures most involved in this type of long-term implicit memory are the:

A. hippocampus and amygdala

B. amygdala and neocortex

C. hippocampus and neocortex

D. cerebellum and basal ganglia

Question 18

The structure most involved in encoding the emotional component of a memory, such as fear, is the:

A. amygdala

B. hippocampus

C. neocortex

D. cerebellum

Question 19

General knowledge about the world — such as knowing that water freezes at 0 degrees Celsius and that a triangle has three sides — is best described as which type of long-term memory?

A. episodic memory

B. procedural memory

C. semantic memory

D. implicit memory

Question 20

Aboriginal peoples' use of songlines to encode and retrieve large amounts of information is an example of a mnemonic used by:

A. written cultures using the method of loci

B. oral cultures using sung narrative

C. written cultures using acronyms

D. neither, because songlines are not mnemonics

Question 21

Sleep is a naturally occurring altered state of consciousness that is broadly categorised into:

A. REM and NREM sleep

B. Stage 1 and Stage 2 sleep

C. circadian and ultradian sleep

D. conscious and unconscious sleep

Question 22

During REM sleep, a person typically shows:

A. the deepest, slowest brain-wave activity of the night

B. no eye movement and high muscle tone

C. the stage from which a sleeper is most easily woken by noise

D. brain activity resembling wakefulness, with the voluntary muscles paralysed

Question 23

The device used to measure muscle tension and movement during a sleep study is the:

A. electroencephalograph (EEG)

B. electromyograph (EMG)

C. electro-oculograph (EOG)

D. sleep diary

Question 24

A biological rhythm with a period of about 24 hours, such as the sleep-wake cycle, is a:

A. ultradian rhythm

B. zeitgeber

C. circadian rhythm

D. single sleep cycle

Question 25

As darkness falls in the evening, the pineal gland is signalled to:

A. increase its release of melatonin

B. decrease its release of melatonin

C. release cortisol

D. release GABA

Question 26

Compared with normal waking consciousness, a person in a naturally occurring altered state of consciousness such as sleep typically shows:

A. greater awareness of their surroundings and more accurate time perception

B. reduced awareness of their surroundings and a distorted perception of time

C. faster and more accurate control of voluntary movement

D. no change at all in their level of self-control

Question 27

Feeling irritable and low in mood after several nights of too little sleep is best classified as an effect on which domain of functioning?

A. cognitive

B. behavioural

C. affective

D. circadian

Question 28

Which of the following effects of sleep deprivation is a *cognitive* effect?

A. feeling low, flat and easily frustrated

B. finding it hard to concentrate and making more errors on a task

C. moving clumsily and reacting sluggishly

D. an increased number of microsleeps during the day

Question 29

A teenager cannot fall asleep until about 2 am and struggles to wake for school, but sleeps a normal length and feels rested when free to choose their own hours. This is most consistent with:

A. Delayed Sleep Phase Syndrome

B. Advanced Sleep Phase Disorder

C. full sleep deprivation

D. a naturally short sleep requirement

Question 30

Bright light in the morning is used to treat Delayed Sleep Phase Syndrome because it:

A. delays the body clock, shifting sleep later

B. increases melatonin release during the day

C. has no effect on the circadian rhythm

D. advances the body clock, shifting sleep earlier

Question 31

Which of the following best describes a person with a high level of mental wellbeing?

A. a person who never experiences stress or negative emotions

B. a person who can cope with everyday stresses, work productively and maintain relationships

C. a person who has no diagnosed mental disorder, regardless of how they are functioning

D. a person whose level of wellbeing never changes over time

Question 32

Which of the following best demonstrates resilience?

A. A student avoids all challenging subjects so that she never feels stressed.

B. A person hides all their feelings and pretends that nothing ever bothers them.

C. After being cut from a sports team, a teenager is upset at first but then trains harder, adapts her goals and recovers her usual confidence.

D. A worker relies on a sleeping tablet every night to get through a stressful period.

Question 33

For Aboriginal and Torres Strait Islander peoples, social and emotional wellbeing (SEWB) is best described as:

A. a framework focused only on physical health

B. a model identical to the biomedical model

C. a framework concerned only with the individual

D. a multidimensional and holistic framework encapsulating all elements of being — body, mind and emotions, family and kinship, community, culture, Country, spirituality and ancestors

Question 34

Applying a *biopsychosocial* approach to mental wellbeing means considering:

A. biological, psychological and social factors and the way they interact

B. biological factors alone, because they are the most important

C. a person's genes and brain chemistry, separately from their environment

D. only the social support available to the person

Question 35

For Aboriginal and Torres Strait Islander peoples, cultural continuity and self-determination are examples of:

A. risk factors for mental illness

B. biological protective factors

C. cultural determinants that help to maintain wellbeing

D. psychological interventions for specific phobia

Question 36

Which of the following is a *biological* factor that can contribute to the development of a specific phobia?

A. catastrophic thinking about the feared stimulus

B. long-term potentiation that strengthens the neural pathway for the fear response

C. avoidance of the feared stimulus

D. stigma experienced from other people

Question 37

In the behavioural model of specific phobia, a phobia is typically first developed (precipitated) through one process and then maintained (perpetuated) through another. These are, in order:

A. classical conditioning; operant conditioning

B. operant conditioning; classical conditioning

C. observational learning; catastrophic thinking

D. long-term potentiation; GABA dysfunction

Question 38

Catastrophic thinking is a cognitive factor that best explains how a specific phobia is:

A. first precipitated (triggered)

B. maintained and perpetuated over time

C. diagnosed by a psychologist

D. permanently cured

Question 39

Short-acting anti-anxiety benzodiazepines help to manage phobic anxiety because they act as:

A. GABA antagonists that increase neural firing

B. stimulants that increase glutamate activity

C. GABA agonists that increase inhibitory (calming) effects

D. hormones that increase cortisol release

Question 40

A psychological intervention in which a person is gradually exposed to a hierarchy of feared situations while using relaxation is:

A. psychoeducation

B. breathing retraining

C. benzodiazepine therapy

D. systematic desensitisation

End of Section A

Section B

Instructions for Section B: answer all questions in the spaces provided (in this workbook, on your own paper). Write using clear, concise language. The number of marks is shown after each question or part; the depth of your answer should match the command term and the marks available. The final question (Question 9) is worth 10 marks and is marked holistically against the assessment criteria printed at the end of the solutions.

Question 1 (8 marks)

Maya is home alone when a smoke alarm suddenly goes off with a loud screech. She jumps, her heart pounds, and she feels a surge of energy. When a small moth then flies toward her eye, she blinks automatically. Once she realises there is no fire, Maya walks over and switches the alarm off.

a. When the smoke alarm startles Maya, her sympathetic nervous system becomes dominant. Describe two physiological changes it produces that prepare her body for action. 2 marks

b. Later, Maya touches a hot cup and pulls her hand away before she feels any pain. Explain why this hand-withdrawal is described as a spinal reflex, with reference to the role of the spinal cord and whether the response is conscious. 3 marks

c. Distinguish between a conscious response and an unconscious response, using one example of each from the scenario. 3 marks

Question 2 (8 marks)

A psychologist investigates whether a brief slow-breathing exercise reduces stress before an exam. Sixty Year 12 students volunteer. Half are randomly allocated to complete a 10-minute slow-breathing exercise immediately before a practice exam; the other half sit quietly for 10 minutes. Each student's stress is then measured using a self-report stress rating from 0 (no stress) to 10 (extreme stress).

a. Identify the independent variable and the dependent variable in this investigation. 2 marks

b. Write a hypothesis for this investigation. Your hypothesis should refer to the population, both conditions of the independent variable, and the expected direction of the result. 3 marks

c. Identify one ethical consideration the psychologist must address in this study. 1 mark

d. Using Lazarus and Folkman's Transactional Model of Stress and Coping, distinguish between a student who appraises the exam as a "threat" and a student who appraises it as a "challenge". 2 marks

Question 3 (8 marks)

At a dog-training class, a trainer gives a dog a small treat each time the dog sits on the command "sit". Over several sessions the dog sits reliably as soon as it hears the command. A child watching the class then copies the trainer, giving the dog a treat when it sits.

a. Identify the type of conditioning shown when the dog learns to sit for a treat. 1 mark

b. State the antecedent, the behaviour and the consequence in this example. 3 marks

c. Explain whether the treat is an example of positive or negative reinforcement. 2 marks

d. The child learns to train the dog by watching the trainer. Explain what the child must do at the *retention* stage and at the *reproduction* stage of observational learning. 2 marks

Question 4 (8 marks)

Nina is asked to describe her last birthday party. She easily recalls who was there, what the room looked like and how she felt. She is then asked to imagine, in as much detail as she can, a birthday party she might have next year, and she finds this just as easy. Nina's friend Ravi can describe both parties in words, but says he cannot picture either of them in his mind.

a. Name the type of long-term memory Nina uses to recall the events of her last birthday party. 1 mark

b. Explain how the memory system Nina uses to recall her last birthday party also allows her to construct a detailed picture of a birthday party she might have next year. 3 marks

c. Ravi's difficulty is consistent with aphantasia. State what aphantasia is, and identify one part of this task that Ravi would find difficult. 2 marks

d. Before Nina could remember anything about the party, its sights and sounds first entered her sensory memory. State the approximate duration of sensory memory, and explain why information must be attended to if it is to reach short-term memory. 2 marks

Question 5 (12 marks)

The table below shows the number of minutes one healthy young adult spent in deep NREM Stage 3 sleep and in REM sleep during each of five sleep cycles across a single night.

Sleep cycle	NREM Stage 3 (minutes)	REM (minutes)
1	40	10
2	30	18
3	15	28
4	5	35
5	0	42

a. State the approximate length of one sleep cycle, and identify whether the sleep cycle is a circadian or an ultradian rhythm. 2 marks

b. Sleep is described as a psychological construct. Explain what is meant by the term "psychological construct". 2 marks

c. Name the device that would be used to (i) record the sleeper's brain-wave activity and (ii) detect the rapid eye movements of REM sleep. 2 marks

d. Using the data in the table, describe what happens to the amount of NREM Stage 3 sleep and to the length of the REM periods across the night. 3 marks

e. Compared with this young adult, describe how a newborn's sleep would differ in (i) the total amount of sleep and (ii) the proportion of sleep spent in REM. 2 marks

f. Identify the brain structure that acts as the body's master circadian clock. 1 mark

Question 6 (10 marks)

A researcher measures the reaction time of two groups of adults on a simple computer task. Group A slept a normal eight hours the night before. Group B was kept awake for 24 hours (one night of full sleep deprivation). The results are shown below.

Group	Number of participants	Mean reaction time (ms)	Standard deviation (ms)
A — rested (8 h sleep)	25	280	20
B — 24 h sleep deprived	25	430	45

a. Identify which group is the control group in this investigation, and state one reason why the researcher included it. 2 marks

b. State the blood alcohol concentration to which the affective and cognitive effects of about 24 hours of full sleep deprivation are comparable. 1 mark

c. Write a conclusion that the researcher could reasonably draw from these results. 2 marks

d. Distinguish between a conclusion and an implication, and state one implication of these findings. 3 marks

e. Explain one way the researcher could reduce the effect of random errors when measuring each participant's reaction time. 2 marks

Question 7 (8 marks)

a. Mental wellbeing is understood as lying on a continuum. With reference to their levels of functioning, distinguish between the mental wellbeing of a student who feels mild stress before an exam and that of a student who has a specific phobia of the exam room. 2 marks

b. Identify one biological, one psychological and one social protective factor that could help a person to maintain mental wellbeing. 3 marks

c. Aunty June, an Aboriginal Elder, says that spending time on Country with her family and passing on language to her grandchildren are central to her wellbeing. Using the social and emotional wellbeing (SEWB) framework, explain how these connections support her wellbeing. 3 marks

Question 8 (8 marks)

For the past six months Ali has been caring for an unwell parent while studying full time. He often feels "on edge", and his stomach has become upset far more easily than it used to. Ali deals with the pressure in different ways: some weeks he sits down and works out a study timetable and asks his sister to share the caring; other weeks he stops opening his emails and watches television instead.

a. Explain what is meant by the gut-brain axis, and use it to suggest why Ali's stomach has become upset so easily during this stressful period. 3 marks

b. Ali's two ways of dealing with the pressure illustrate an approach strategy and an avoidance strategy. Identify which is which, and explain how the two types of strategy differ. 3 marks

c. Ali's counsellor tells him that no single coping strategy works best in every situation. Explain this advice with reference to the *context-specific effectiveness* of a coping strategy. 2 marks

Question 9 (10 marks)

Liam is 16 and has developed a specific phobia of flying after a frightening flight two years ago. He now feels intense anxiety at the mere thought of airports, avoids any family holiday that involves flying, and is convinced that "the plane will definitely crash". His psychologist recommends a course of systematic desensitisation. In a small trial reported to Liam's family, 8 of 10 people with a flying phobia who completed systematic desensitisation were later able to board a short flight, compared with only 2 of 10 people who were placed on a waiting list and received no treatment.

Using a biopsychosocial approach, explain how biological, psychological and social factors could contribute to the development and maintenance of Liam's specific phobia. Then, with reference to the trial data, evaluate the evidence for using systematic desensitisation to treat his phobia. Refer to the scenario and the data throughout your response.

End of Section B

End of examination questions

Section A — answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	11	B	21	A	31	B
2	A	12	C	22	D	32	C
3	D	13	A	23	B	33	D
4	B	14	D	24	C	34	A
5	A	15	B	25	A	35	C
6	D	16	C	26	B	36	B
7	C	17	D	27	C	37	A
8	B	18	A	28	B	38	B
9	D	19	C	29	A	39	C
10	A	20	B	30	D	40	D

Q1. C — the nervous system's two main divisions are the central (brain and spinal cord) and peripheral nervous systems; the sympathetic/parasympathetic and somatic/autonomic pairs are subdivisions, not the two main divisions.

Q2. A — the autonomic nervous system is a subdivision of the peripheral nervous system (alongside the somatic); it is not part of the central nervous system.

Q3. D — pupil constriction in bright light is involuntary and occurs without the person's awareness, so it is an unconscious response; raising a hand, deciding to walk somewhere and writing a name are all voluntary actions made with awareness.

Q4. B — the knee-jerk (patellar) reflex is a spinal reflex coordinated by the spinal cord, so it is fast and involuntary, not a brain-coordinated, parasympathetic or voluntary somatic response.

Q5. A — GABA is the main inhibitory neurotransmitter, making the postsynaptic neuron less likely to fire; glutamate is excitatory, and cortisol is a hormone, not a neurotransmitter.

Q6. D — dopamine and serotonin are neuromodulators that influence brain activity and mental processes; they are not hormones limited to the stress response or divisions of the nervous system.

Q7. C — cortisol is released via the HPA axis during prolonged (chronic) stress; melatonin regulates sleep and GABA/glutamate are neurotransmitters.

Q8. B — the fight-flight-freeze response is produced by the sympathetic nervous system, which arouses the body for action; the parasympathetic system calms it afterwards.

Q9. D — Selye's GAS runs alarm reaction → resistance → exhaustion.

Q10. A — primary appraisal is judging whether a situation is stressful and, if so, whether it is a threat, harm/loss or challenge; judging one's coping resources is secondary appraisal.

Q11. B — before conditioning the neutral stimulus produces no relevant conditioned response (at most an orienting reflex); it only produces the response after being paired with the UCS.

Q12. C — operant conditioning is analysed as antecedent → behaviour → consequence; "attention, retention, reproduction" belongs to observational learning.

Q13. A — switching off the loud alarm removes an unpleasant stimulus and makes getting out of bed more likely, so it is negative reinforcement (removal of an aversive stimulus that increases behaviour).

Q14. D — the five stages of observational learning are attention, retention, reproduction, motivation and reinforcement.

Q15. B — Aboriginal and Torres Strait Islander ways of knowing situate the learner within a multimodal system of knowledge embedded in relationships and patterned on Country, not as an isolated individual.

Q16. C — the multi-store model has sensory memory, short-term memory and long-term memory; encoding/storage/retrieval are memory processes, not stores.

Q17. D — well-learned motor skills are implicit (procedural) long-term memories, which rely on the cerebellum and basal ganglia; the hippocampus and neocortex serve explicit memory and the amygdala the emotional component of a memory.

Q18. A — the amygdala encodes the emotional component of memories, especially fear.

Q19. C — general knowledge and facts about the world, held independently of any personal memory of learning them, are stored as semantic memory; a personally experienced event would be episodic memory.

Q20. B — songlines are a sung-narrative mnemonic used by oral cultures, including Aboriginal peoples; the method of loci and acronyms are typically associated with written cultures.

Q21. A — sleep is broadly categorised into REM and NREM sleep; circadian/ultradian describe rhythms, not the two categories of sleep.

Q22. D — REM shows brain activity resembling wakefulness together with rapid eye movement and atonia (paralysed voluntary muscles); the deepest, slowest waves occur in NREM Stage 3.

Q23. B — the EMG (electromyograph) records muscle tension and movement; the EEG records the brain and the EOG records eye movement.

Q24. C — a rhythm of about 24 hours is circadian; an ultradian rhythm (such as the ~90-minute sleep cycle) has a period of less than 24 hours.

Q25. A — in darkness the SCN signals the pineal gland to increase melatonin, which promotes sleep; light suppresses melatonin.

Q26. B — in an altered state of consciousness such as sleep, awareness of the surroundings, self-control and the accuracy of time perception are all reduced or distorted compared with normal waking consciousness; control of voluntary movement is reduced, not improved.

Q27. C — irritability and low mood are emotional changes, so they are an affective effect; “circadian” is not a domain of functioning.

Q28. B — difficulty concentrating and making more errors is a cognitive effect of sleep deprivation; feeling low and frustrated is an affective effect, while clumsy, sluggish movement and microsleeps are behavioural effects.

Q29. A — sleeping normally but very late when free to choose, with difficulty waking early, indicates Delayed Sleep Phase Syndrome; a cycle shifted earlier would be ASPD.

Q30. D — a DSPS body clock is too late, so morning bright light advances it, shifting sleep and wake times earlier.

Q31. B — high mental wellbeing means being able to cope with everyday stresses, work productively and maintain relationships; it is not the absence of all negative emotion, nor merely the absence of a diagnosis, and wellbeing does change over time.

Q32. C — being upset but then adapting and recovering usual functioning after a setback demonstrates resilience; avoiding challenges, suppressing all feelings and relying on medication are not resilience.

Q33. D — SEWB is a multidimensional and holistic framework that encapsulates all elements of being: body, mind and emotions, family and kinship, community, culture, Country, spirituality and ancestors; it is broader than physical health and is not concerned with the individual alone.

Q34. A — a biopsychosocial approach treats wellbeing as the product of biological, psychological and social factors acting together and influencing one another; considering any one set of factors in isolation is not a biopsychosocial approach.

Q35. C — cultural continuity and self-determination are cultural determinants that help maintain wellbeing for Aboriginal and Torres Strait Islander peoples.

Q36. B — long-term potentiation, which strengthens the synaptic pathway underlying the conditioned fear response, is a biological factor; catastrophic thinking is cognitive, while avoidance and stigma are behavioural/social.

Q37. A — in the behavioural model a phobia is precipitated by classical conditioning (learning the fear association) and perpetuated by operant conditioning (avoidance is negatively reinforced).

Q38. B — catastrophic thinking is a cognitive factor that maintains/perpetuates a phobia (it keeps the fear going), rather than first causing it, diagnosing it or curing it.

Q39. C — benzodiazepines act as GABA agonists, boosting GABA's inhibitory (calming) effect and reducing anxiety.

Q40. D — gradual exposure to a fear hierarchy combined with relaxation is systematic desensitisation.

Section B — solutions

Q1. (a) Any **two** of: **heart rate increases**, so more blood and oxygen reach the muscles; **breathing becomes faster and deeper**; **adrenaline is released** into the bloodstream; the **pupils dilate**; **blood is redirected from digestion to the skeletal muscles**; **stored glucose is released** for energy. Each change increases the energy and oxygen available to Maya's muscles so that she can fight, flee or freeze. **(b)** Pulling the hand away from the hot cup is a **spinal reflex** because the sensory message travels to the **spinal cord**, which sends the motor command to withdraw the hand *without* the message having to reach and be processed by the brain first. This makes the response very **fast** and, importantly, **unconscious** — Maya only becomes aware of the heat and pain after her hand has already moved. **(c)** A **conscious response** is **voluntary** and made **with awareness**, such as Maya *deciding to walk over and switch the alarm off.* An **unconscious response** is **involuntary** and occurs **without awareness**, such as Maya *automatically blinking* when the moth flies at her eye (or the hand-withdrawal reflex). The two differ in whether the person is aware of, and chooses to make, the response.

Q2. (a) The **independent variable** is whether the student completes the 10-minute slow-breathing exercise or sits quietly (the two conditions). The **dependent variable** is the student's **self-reported stress rating (0–10)**. **(b)** A suitable hypothesis: *It was hypothesised that Year 12 students who complete a 10-minute slow-breathing exercise before a practice exam will report a lower stress rating than Year 12 students who instead sit quietly.* (Full marks require the population — Year 12 students — both conditions of the IV, and a directional prediction for the DV.) **(c)** One ethical consideration is **informed consent** (also acceptable: voluntary participation, the right to withdraw, confidentiality, or the availability of the beneficial exercise to all students afterwards). **(d)** In **primary appraisal**, a student who appraises the exam as a **threat** views it as potentially **harmful and beyond their ability to cope**, producing more stress; a student who appraises it as a **challenge** views it as **demanding but manageable and an opportunity to do well**, producing a more positive, less distressing stress response.

Q3. (a) Operant conditioning. (b) Antecedent: the command "sit" (the stimulus present before the behaviour). **Behaviour:** the dog sits. **Consequence:** the dog receives a treat. **(c)** The treat is **positive reinforcement**: a **desirable stimulus (the treat) is added** after the behaviour, which **increases the likelihood** that the dog will sit again. It is "positive" because something is *added*, and "reinforcement" because the behaviour *increases*. **(d)** At the **retention** stage the child must **form and store a mental representation** of what the trainer did — the command, the dog's response and the timing of the treat — so that it can be **recalled later**. At the **reproduction** stage the child must have the **physical and mental ability to carry out the behaviour**, and then actually **performs it**, giving the dog a treat straight after it sits.

Q4. (a) Episodic memory (an autobiographical memory of a personally experienced event). **(b)** Episodic memory does not simply replay a stored recording of the past. When Nina imagines next year's party, her brain **retrieves details from her stored episodic (and semantic) memories** — people, places, sounds, feelings — and **recombines them into a new scene she has never actually experienced**. Constructing a **possible imagined future** therefore draws on the **same memory system and the same brain regions (including the hippocampus)** that she uses to retrieve the past. This is why people whose episodic memory is impaired — for example by hippocampal damage or Alzheimer's disease — are also **poor at imagining detailed future events**, and why brain-imaging studies show the same regions active in both tasks. **(c) Aphantasia** is a **reduced or absent ability to voluntarily form mental images** — a person with aphantasia cannot "see" a picture in their mind, even though their memory for facts and events may be intact. Ravi would therefore find it difficult to **picture** either party (accept: to visualise the imagined party), although he can still **describe** both in words. **(d)** Sensory memory holds an **exact copy of incoming sensory**

information for a very brief time — about **0.2–0.4 seconds** for visual (iconic) information and about **3–4 seconds** for auditory (echoic) information. Because the trace **decays almost immediately**, only the information Nina **pays attention to** is transferred into short-term memory; everything else is lost before it can be used.

Q5. (a) One sleep cycle lasts about **90 minutes**. The sleep cycle is an **ultradian** rhythm because its period is **less than 24 hours** and it repeats several times within a single night. **(b)** A **psychological construct** is something that **cannot be directly observed or measured**, but that we **infer** from consistent measurable signs. Sleep is a construct because we cannot "see" sleep itself — we infer it from physiological indicators (such as brain-wave activity) and behavioural indicators (such as closed eyes and stillness). **(c)** (i) The **EEG (electroencephalograph)** records brain-wave activity; (ii) the **EOG (electro-oculograph)** detects the rapid eye movements of REM sleep. **(d)** Across the night, the amount of **NREM Stage 3 sleep decreases** — it is greatest in the first cycle (40 minutes) and falls steadily to none by the fifth cycle (0 minutes), so deep sleep is concentrated **early** in the night. At the same time, the **REM periods lengthen** — from about 10 minutes in cycle 1 to about 42 minutes in cycle 5 — so REM is **longest towards morning**. **(e)** Compared with this young adult, a newborn would (i) sleep a **much greater total amount** (about 14–17 hours per day, versus roughly 7–9 hours) and (ii) spend a **much larger proportion** of that sleep in **REM** (about 50%, versus roughly 20–25% for the adult). **(f)** The **suprachiasmatic nucleus (SCN)**.

Q6. (a) Group A — the rested group who slept a normal eight hours — is the control group, because it does not receive the experimental treatment (sleep deprivation). It was included to provide a **baseline for comparison**: without it the researcher could not know whether Group B's mean of 430 ms was slower than normal, so the control group is what allows the difference to be attributed to the sleep deprivation rather than to the task itself. **(b)** A blood alcohol concentration of about **0.10**. **(c)** A reasonable conclusion: *In this sample, adults who experienced 24 hours of full sleep deprivation had a slower mean reaction time (430 ms) than adults who slept normally (280 ms), supporting the idea that full sleep deprivation impairs reaction time.* **(d)** A **conclusion** is a decision about **what the results show for the people and variables actually studied** (here, that sleep deprivation slowed reaction time in this sample). An **implication** is a **broader real-world consequence or suggested action** that follows from the findings. One implication is that **people should not drive (or operate machinery) after being awake for a long period**, because their slowed reaction time makes them dangerous, much like drink-driving. **(e)** The researcher could **take repeated measurements of each participant's reaction time and calculate a new mean**, and/or **test a larger number of participants**. Random errors are **unpredictable variations** that produce a **spread of readings**, so averaging repeated measurements cancels much of that variation and gives a value closer to each participant's true reaction time — that is, it improves the **precision** (and the repeatability) of the measurement.

Q7. (a) The student with **mild exam stress** sits **towards the high mental wellbeing end** of the continuum: the stress is a **normal, short-lived response** to a demand, and their **level of functioning is largely unaffected** — they keep studying, sleeping and seeing friends as usual. The student with a **specific phobia** of the exam room sits **towards the low mental wellbeing end**: their fear is **intense, persistent and out of proportion** to the actual danger, and it **significantly impairs their level of functioning** — they avoid the exam room and may be unable to sit the exam at all. The two differ in **how far their functioning is disrupted, and for how long**; neither position is fixed, because wellbeing fluctuates over time. **(b)** One example of each: **biological** — adequate sleep (or adequate nutritional intake and hydration); **psychological** — cognitive behavioural strategies (or mindfulness meditation); **social** — authentic, energising support from family, friends and community. **(c) Social and emotional wellbeing (SEWB)** is a **multidimensional and holistic framework** for wellbeing used by many Aboriginal and Torres Strait Islander peoples. It encapsulates **all elements of being** — body, mind and emotions, family and kinship, community, culture, Country, spirituality and ancestors — and treats them as **interconnected**, so wellbeing is never located in the individual alone. Time spent **on Country** strengthens Aunty June's **connection to Country**; being there **with her family** strengthens her **connection to family and kinship**, and to **community**; and **passing on language** strengthens her **connection to culture** and to **ancestors**, and is an example of **cultural continuity**. Because these elements are interconnected, strengthening them supports her wellbeing **as a whole**, including her mind and emotions, rather than only one part of it.

Q8. (a) The **gut-brain axis (GBA)** is the **two-way (bidirectional) communication network** linking the **gut, including its microbiota**, with the **brain and central nervous system**, carried largely by the **vagus nerve** and by chemical messengers such as hormones and neurotransmitters. Because the link runs in both directions, Ali's **prolonged stress** can travel from brain to gut, altering gut activity and the balance of his **gut microbiota**, which shows up as physical symptoms such as an easily upset stomach; signals travelling the other way, from gut to brain, can in turn affect his mood and how stressed he feels. **(b)** Working out a study timetable and asking his sister to share

the caring is an **approach strategy**: Ali **confronts the stressor directly** and acts to reduce or remove its demands. Not opening his emails and watching television is an **avoidance strategy**: Ali **moves away from the stressor**, easing his distress in the short term without addressing its cause. The two types differ in whether the effort is **directed at the stressor itself (approach)** or at **escaping or distracting from it (avoidance)**. **(c) Context-specific effectiveness** means that how useful a coping strategy is **depends on how well it fits the demands of the particular situation**. An approach strategy suits a stressor Ali can actually change, such as his study workload, where planning reduces the demand. When a stressor is largely outside his control, such as his parent's illness, an avoidance strategy such as taking an evening off can be adaptive because it gives him respite and restores his resources. No single strategy is therefore best in every situation.

Assessment criteria for the 10-mark question

Question 9 is marked holistically out of 10 against the four criteria below.

A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly accurate, well-applied terminology; clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little

Band	Marks	Descriptor
		analysis or evaluation; assertion without evidence.
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Question 9 — model high-scoring response.

Liam's specific phobia of flying can be explained using a **biopsychosocial approach**, in which **biological, psychological and social factors** interact to develop and maintain the disorder. **Biologically**, **GABA dysfunction** may contribute: GABA is the brain's main inhibitory neurotransmitter, so if Liam produces too little GABA (or his neurons respond to it poorly) his nervous system is less able to "calm down", leaving him more easily and intensely aroused by anything to do with flying. **Long-term potentiation** may then strengthen the neural pathways linking flying to fear, so the fear response becomes more readily and strongly activated over time. **Psychologically**, the phobia was likely **precipitated by classical conditioning**: the **frightening flight (UCS)** produced **fear (UCR)**, and because flying and airports were present at the time they became **conditioned stimuli** that now trigger **fear (CR)** on their own. It is then **perpetuated by operant conditioning** — each time Liam **avoids** flying, his anxiety drops, which **negatively reinforces** the avoidance so it continues. **Cognitive factors** deepen the problem: his **catastrophic thinking** ("the plane will definitely crash") and any **memory bias** toward the frightening flight keep his fear alive rather than causing it in the first place. **Socially**, a **specific environmental trigger** (booking a holiday that requires flying) can set off his anxiety, and **stigma around seeking treatment** may have delayed him getting help. These factors are connected: the biological vulnerability makes the conditioned fear easier to learn, and the cognitive and social factors sustain the avoidance that stops the fear from fading.

Systematic desensitisation is an appropriate psychological intervention because it directly targets the maintained avoidance: Liam is gradually exposed to a **hierarchy** of feared flying situations while using **relaxation**, so the fear response is replaced by calm and the avoidance is broken. The **trial data** provide **some support** for this: **8 of 10** treated people could board a flight afterwards, compared with only **2 of 10** on the waiting list — a large difference suggesting the treatment, not the mere passage of time, produced the improvement, since the untreated group mostly did not improve. **However, the evidence has clear limitations**: the sample is **very small** (only 10 people per group), so the result may not generalise reliably; we are not told **how people were allocated** to the groups or whether they were similar to begin with; and there is **no long-term follow-up**, so we cannot tell whether the improvement lasted. **On balance**, the biopsychosocial account explains why Liam's phobia developed and persists, and the trial offers **promising but not conclusive** evidence that systematic desensitisation would help him. It would be reasonable for Liam to begin systematic desensitisation (possibly supported by breathing retraining or psychoeducation for his family so they do not encourage avoidance), while recognising that a larger, longer study would be needed to be confident of lasting benefit.

Practice Examination 3

Reading time: 15 minutes. Writing time: 2 hours 30 minutes.

Section A consists of 40 multiple-choice questions and is worth 40 marks. Section B is worth 80 marks. Total 120 marks. Answer all questions. No calculator, no notes, and no formula or data sheet may be used. Unless otherwise indicated, diagrams are not drawn to scale.

For Section A, choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. No marks are deducted for an incorrect answer.

Section A

Question 1

While picking blackberries, Elif feels a thorn pierce her thumb. Her hand jerks back almost instantly, and only a moment later does she become aware of a sharp pain. The rapid withdrawal of her hand is best explained as:

A. a voluntary movement initiated by the primary motor cortex

B. a spinal reflex, coordinated by the spinal cord without initial involvement of the brain

C. the parasympathetic nervous system returning the body to homeostasis

D. the sympathetic nervous system as part of the flight-or-fight response

Question 2

Immediately before a driving test, Maya notices that her heart is pounding and her mouth feels dry. These changes are produced mainly by the:

A. somatic nervous system

B. parasympathetic nervous system

C. sympathetic nervous system

D. central nervous system acting on its own

Question 3

Compared with a neurotransmitter such as glutamate, a neuromodulator such as dopamine or serotonin is best described as a chemical that:

A. adjusts the responsiveness of many neurons across a wider brain region, over a longer period

B. carries one fast signal across a single synapse to the next neuron

C. is released by the adrenal glands rather than by neurons

D. binds directly to muscle fibres to trigger a contraction

Question 4

Long-term potentiation (LTP) is best described as:

A. the weakening of synaptic connections following low-frequency stimulation

B. the growth of new dendritic branches that occurs only after physical brain injury

C. a temporary block of neurotransmitter release caused by GABA

D. the strengthening of synaptic connections following repeated, high-frequency stimulation

Question 5

During adolescence, synaptic connections in Jorja's frontal lobe that are only rarely activated are eliminated, so that the connections she does use operate more efficiently. This is an example of:

A. long-term depression

B. sprouting

C. pruning

D. long-term potentiation

Question 6

According to Selye's General Adaptation Syndrome, a person who has been coping with an ongoing stressor for many weeks, and is now becoming physically ill and exhausted with depleted resources, is in the:

A. exhaustion stage

B. alarm-reaction stage

C. resistance stage

D. counter-shock phase

Question 7

In Lazarus and Folkman's Transactional Model of Stress and Coping, judging whether a new situation is a threat, a harm or loss, or a challenge is part of:

A. secondary appraisal

B. primary appraisal

C. the alarm reaction

D. avoidance coping

Question 8

Which of the following best describes the gut–brain axis?

A. a one-way pathway by which the brain controls digestion

B. the release of cortisol by the adrenal glands during prolonged stress

C. a network of spinal reflexes that controls the stress response

D. a two-way communication link between the gut and the brain, in which the vagus nerve and gut microbiota play a role

Question 9

Whenever Noor fills her horse's feed bucket, the metal gate latch clicks. Over many weeks the horse has begun to walk to the gate as soon as it hears the latch click, before any feed appears. After conditioning, the click of the gate latch is the:

A. neutral stimulus

B. unconditioned stimulus

C. conditioned stimulus

D. unconditioned response

Question 10

For classical conditioning to be most effective, the neutral stimulus should be presented:

A. just before the unconditioned stimulus

B. at exactly the same time as the unconditioned stimulus

C. just after the unconditioned response

D. only once, at the same moment as the unconditioned stimulus

Question 11

Each time his toddler whines in the supermarket, Callum quickly hands her a snack, which immediately stops the whining. For Callum, the behaviour of handing over the snack is being maintained by:

A. positive reinforcement

B. positive punishment

C. response cost

D. negative reinforcement

Question 12

A behaviour is followed by the removal of a pleasant stimulus, and as a result the behaviour becomes less likely to occur again. This is an example of:

A. negative reinforcement

B. positive punishment

C. negative punishment (response cost)

D. positive reinforcement

Question 13

While learning a new dance from an online video, Hana first watches closely and concentrates on every move the instructor makes. According to Bandura's observational learning, this describes the stage of:

A. attention

B. retention

C. reproduction

D. motivation

Question 14

In Aboriginal and Torres Strait Islander ways of knowing, songlines are best understood as:

A. a written record of important laws and events

B. a modern adaptation of the method of loci developed after colonisation

C. a technique used only for remembering lists of unrelated words

D. a multimodal system that encodes knowledge in song, narrative and connection to Country

Question 15

In the Atkinson–Shiffrin multi-store model of memory, information held in short-term memory that is not rehearsed is most likely to be:

A. lost through decay or displacement

B. transferred automatically into long-term memory

C. re-encoded as a procedural memory

D. stored permanently in sensory memory

Question 16

Once a new explicit long-term memory has been consolidated, it is thought to be stored across the:

A. hippocampus

B. amygdala

C. neocortex

D. cerebellum

Question 17

Remembering the general fact that a leap year has 366 days, without recalling when or where you first learnt it, is an example of:

A. episodic memory

B. semantic memory

C. procedural memory

D. autobiographical memory

Question 18

Research suggests that people who have difficulty retrieving detailed episodic memories also tend to have difficulty:

A. performing well-learned procedural skills

B. recognising familiar faces

C. maintaining a normal sleep-wake cycle

D. vividly imagining and constructing possible personal futures

Question 19

Aphantasia is best described as:

A. the progressive loss of memory and cognition caused by Alzheimer's disease

B. a reduced or absent ability to generate voluntary mental imagery

C. an inability to form any new long-term memories

D. the loss of procedural memories following damage to the cerebellum

Question 20

A student memorises a speech by mentally placing each part of it at a different, familiar location along her walk to school, then retracing the walk in her mind to recall it. This mnemonic is:

A. the method of loci

B. an acronym

C. an acrostic

D. chunking

Question 21

Sleep is described as a psychological construct because it:

A. can be measured directly, in the same way as a person's height

B. cannot be observed directly and must be inferred from physiological and behavioural indicators

C. is a state of normal waking consciousness

D. involves a complete and permanent loss of brain activity

Question 22

During one stage of sleep a person shows high-frequency, low-amplitude brain waves similar to those of the awake brain, together with paralysis of the voluntary muscles (atonia). This stage is:

A. NREM Stage 1

B. NREM Stage 2

C. NREM Stage 3

D. REM sleep

Question 23

Which physiological measure would show the slow, high-amplitude delta waves that are characteristic of NREM Stage 3 sleep?

A. the electroencephalograph (EEG)

B. the electro-oculograph (EOG)

C. the electromyograph (EMG)

D. a sleep diary

Question 24

To confirm the muscle atonia (loss of muscle tone) that occurs during REM sleep, a researcher would rely most on the:

A. EEG

B. EOG

C. EMG

D. sleep diary

Question 25

The roughly 24-hour cycle that governs the timing of the sleep-wake cycle is a:

A. ultradian rhythm

B. circadian rhythm

C. sleep cycle

D. zeitgeber

Question 26

Which sequence correctly describes how the onset of darkness in the evening leads a person to feel sleepy?

A. retina → pineal gland → SCN → decreased melatonin

B. SCN → retina → pineal gland → decreased melatonin

C. pineal gland → SCN → retina → increased melatonin

D. retina → SCN → pineal gland → increased melatonin

Question 27

Compared with a healthy young adult, a newborn infant typically obtains:

A. less total sleep and a smaller proportion of REM

B. more total sleep and a larger proportion of REM

C. more total sleep and a smaller proportion of REM

D. the same total sleep but a larger proportion of NREM Stage 3

Question 28

Research comparing sleep deprivation with alcohol intoxication has found that being awake for about 17 hours produces impairment in concentration and mood that is comparable to a blood alcohol concentration of about:

A. 0.05

B. 0.00

C. 0.10

D. 0.15

Question 29

Having stayed awake all night to finish an assignment, Hamish finds that a jammed printer leaves him far angrier and more upset than it normally would, and he cannot easily bring his reaction back under control. This effect of sleep deprivation is best classified as a change in which type of functioning?

A. cognitive

B. behavioural

C. circadian

D. affective

Question 30

A teenager with Delayed Sleep Phase Syndrome cannot fall asleep until about 2 am. To shift his body clock earlier, bright light therapy should be delivered:

A. in the evening, to delay the clock

B. in the morning, to advance the clock

C. in the evening, to advance the clock

D. at midday, to reset the clock

Question 31

To describe mental wellbeing as existing on a continuum means that:

A. a person is either mentally healthy or has a mental disorder, with nothing in between

B. mental wellbeing is fixed from birth and does not change

C. a person's level of wellbeing can shift over time and sit anywhere between high wellbeing and a mental health problem

D. only people with a diagnosed disorder can be placed on the continuum

Question 32

Which of the following is the best example of resilience?

A. avoiding every situation that might cause stress

B. adapting to a major setback and gradually recovering one's usual level of functioning

C. never feeling upset when something goes wrong

D. relying on other people to solve all of one's problems

Question 33

For Aboriginal and Torres Strait Islander peoples, social and emotional wellbeing (SEWB) is best described as:

A. a measure of how well an individual is functioning at work or at school

B. the absence of any diagnosed mental illness

C. a treatment program delivered to an individual by a psychologist

D. a multidimensional and holistic framework in which wellbeing encompasses body, mind and emotions, family and kinship, community, culture, Country, spirituality and ancestors

Question 34

Which of the following is an example of a *social* protective factor for mental wellbeing?

A. adequate nutrition and hydration

B. the use of cognitive behavioural strategies

C. a strong network of supportive relationships

D. an adequate amount of sleep

Question 35

In the biopsychosocial explanation of specific phobia, which factor is correctly matched with its category?

A. catastrophic thinking — biological

B. classical conditioning — social

C. reduced GABA activity — biological

D. stigma from other people — psychological

Question 36

In the maintenance of a specific phobia, catastrophic thinking is best described as a factor that:

A. perpetuates the phobia by overestimating the danger posed by the phobic stimulus

B. originally causes the phobia through a single traumatic event

C. reduces avoidance behaviour over time

D. is a biological rather than a psychological factor

Question 37

Mental wellbeing can be understood as a continuum, along which stress, anxiety and specific phobia sit at different points. Which description is most characteristic of a specific phobia rather than of stress or anxiety?

A. feeling tense and under pressure while working to meet a demanding deadline

B. feeling a general sense of apprehension and unease about an event that has not yet happened

C. feeling briefly nervous before a job interview, then settling once it begins

D. feeling intense, persistent fear of one particular object that is out of all proportion to the danger it poses, and organising daily life so as to avoid it

Question 38

Breathing retraining is sometimes used to help a person manage the anxiety of a specific phobia. It works mainly by:

A. gradually pairing relaxation with a hierarchy of feared situations

B. teaching slow, controlled breathing that reduces hyperventilation and physiological arousal

C. enhancing the inhibitory effect of GABA with medication

D. educating the family so that they do not reinforce avoidance

Use the following information to answer Questions 39 and 40.

A researcher recruited 60 adults who reported poor sleep and randomly allocated them to two groups. For two weeks, one group followed a set of sleep-hygiene instructions given by the researcher, while the other group made no changes to their routine. At the end of the two weeks the researcher measured each participant's average time taken to fall asleep (sleep-onset latency, in minutes).

Question 39

In this investigation, the dependent variable is:

A. the average time taken to fall asleep (sleep-onset latency)

B. whether the participants followed the sleep-hygiene instructions

C. the 60 adults who reported poor sleep

D. the two-week duration of the study

Question 40

The researcher found that the sleep-hygiene group fell asleep faster, on average, than the no-change group. Which of the following is the most appropriate conclusion from this result?

A. Sleep hygiene will cure insomnia in the whole population.

B. Screens are the single cause of poor sleep.

C. Following the sleep-hygiene instructions reduced the average sleep-onset latency of the poor-sleeping adults in this sample.

D. All adults should be prescribed a sleep-hygiene program.

End of Section A

Section B

Answer all questions in the spaces provided. Write using blue or black pen. The marks allocated to each question, or part of a question, are shown; where more than one mark is available, the depth of the response should match the command term and the mark allocation. Your response to Question 9 will be assessed against the assessment criteria for the 10-mark question.

Question 1 (6 marks)

Hugo has just finished a long bushwalk. He sits down at the campsite and deliberately unwraps and eats his lunch. While he eats, his stomach and intestines begin to churn, his heart rate slows, and he starts to feel calm and drowsy.

a. Unwrapping the lunch and the churning of Hugo's stomach are controlled by different subdivisions of his peripheral nervous system. Name each subdivision, and state whether the response it controls is conscious or unconscious. 2 marks

b. Name the division of the autonomic nervous system that dominates while Hugo rests and digests, and describe two changes it produces in the body.

2 marks

c. Distinguish between the general effect of an excitatory neurotransmitter, such as glutamate, and an inhibitory neurotransmitter, such as GABA, on a postsynaptic neuron. 2 marks

Question 2 (8 marks)

Soon after Aisha adopted her cat, Juno, she took him on a long interstate drive in a hard plastic carrier. The trip was hot and noisy, and Juno yowled and shook for hours. Now, as soon as the carrier is brought out of the cupboard, Juno flattens himself and hides, before he is anywhere near the car. To help him, Aisha leaves the carrier open on the floor and gives Juno a small piece of fish each time he steps inside it, and over several weeks Juno enters the carrier more and more readily.

a. Using classical conditioning, identify the unconditioned stimulus, the conditioned stimulus and the conditioned response in the development of Juno's hiding. 3 marks

b. Explain how operant conditioning is being used to increase how often Juno enters the carrier, referring to the type of reinforcement involved. 3 marks

c. Aisha's friend learns the same training technique after watching Aisha use it. Name two stages of observational learning, other than attention, that the friend must go through. 2 marks

Question 3 (9 marks)

Grace, aged 82, is in the early stages of Alzheimer's disease. Her hands still move smoothly over the keys when she plays the piano pieces she learned as a young woman, although she cannot say when or where she learned them. She clearly remembers the day she was married more than fifty years ago, and she can still state general facts such as the capital city of Australia. However, she struggles to remember what she ate for breakfast this morning, or to learn her new carer's name.

a. Using the Atkinson–Shiffrin multi-store model, explain why Grace can hold her carer's name in mind for a few seconds but cannot recall it the next day. 3 marks

b. Distinguish between implicit and explicit long-term memory, and state which of the two Grace relies on when she plays the piano.

2 marks

c. Distinguish between episodic and semantic memory, using one example of each from the scenario. 2 marks

d. A therapist suggests Grace's family use a mnemonic to help her remember a short daily routine. Name one mnemonic other than the method of loci, and briefly explain how it would aid her memory. 2 marks

Question 4 (10 marks)

A researcher investigated whether one night of total sleep deprivation affects cognitive performance. Forty university students were randomly allocated to two groups. The sleep group slept normally at home, while the deprivation group stayed awake all night in the laboratory under supervision. The next morning, all participants completed the same computerised reaction-time task. The mean reaction time and the standard deviation for each group are shown below.

Group	Mean reaction time (ms)	Standard deviation (ms)
Normal sleep	295	18
Sleep-deprived	388	46

a. Identify the independent variable and the dependent variable in this investigation. 2 marks

b. Write a directional research hypothesis for this investigation. 3 marks

c. State what a standard deviation indicates about a set of scores, and identify which group's results were more precise. 2 marks

d. Using the data, write an appropriate conclusion for this investigation. 2 marks

e. Identify one ethical consideration the researcher would need to manage in the sleep-deprivation condition. 1 mark

Question 5 (8 marks)

Nadia has recently begun a job that requires her to work overnight shifts (11 pm to 7 am) for a week at a time, then switch back to daytime hours. During her night-shift weeks she sleeps poorly during the day and feels exhausted and low, even though she spends enough time in bed. On her days off she quickly returns to sleeping well at night and feels rested.

a. Name the type of sleep disorder Nadia is most likely experiencing, and explain why it is classified this way rather than as sleep deprivation. 3 marks

b. Explain how bright light exposure could be used to help Nadia's body clock adjust to staying awake at night.

3 marks

c. Identify two sleep-hygiene strategies Nadia could use to improve the quality of her daytime sleep. 2 marks

Question 6 (11 marks)

After unexpectedly losing his job, Daniel initially had trouble sleeping, felt anxious, and withdrew from his friends. Over the following weeks — supported by his family, exercising regularly, and gradually reframing the setback as a chance to retrain — he adjusted and began applying for new roles.

a. With reference to levels of functioning, explain how Daniel's mental wellbeing when he first lost his job differed from his mental wellbeing several weeks later. 3 marks

b. Define resilience and identify one example of it in the scenario. 2 marks

c. Using the biopsychosocial approach, identify one biological, one psychological and one social protective factor evident in Daniel's recovery. 3 marks

d. For Aboriginal and Torres Strait Islander peoples, the social and emotional wellbeing (SEWB) framework recognises cultural determinants of wellbeing. Explain how one cultural determinant can act as a protective factor for mental wellbeing. 3 marks

Question 7 (10 marks)

Farid has a specific phobia of deep water. It began when, as a young child, he was knocked over by a wave at the beach and held under the surface for several seconds before an adult pulled him up. Now the sight of a full swimming pool makes his heart pound, and he invents excuses to miss his family's weekend swims. A psychologist works with Farid using systematic desensitisation. Part of Farid's fear hierarchy is shown below.

Step	Situation	Anxiety rating (0–100)
1	Looking at a photograph of an empty swimming pool	20
2	Watching a video of children playing in a pool	40
3	Sitting on the pool edge with his feet in the water	60
4	Standing in the pool with the water at chest height	85

a. Using classical conditioning, explain how Farid's phobia of deep water may have developed. In your answer, identify the unconditioned stimulus and the conditioned stimulus. 3 marks

b. Explain how Farid's avoidance of his family's weekend swims helps to maintain his phobia, referring to operant conditioning. 2 marks

c. Explain how the psychologist would use the fear hierarchy, together with relaxation, to treat Farid's phobia through systematic desensitisation. 3 marks

d. Identify one psychological evidence-based intervention for specific phobia other than systematic desensitisation, and briefly state how it helps. 2 marks

Question 8 (8 marks)

For her practical investigation, Zara tested whether using an acronym helps people remember a list of words. Her target population was students in her own year level at her school, and she recruited her 30 participants by asking the students in her own classes to take part. Half were shown a 10-word list together with an acronym to help them remember it (the acronym group); the other half saw the same list with no acronym (the control group). After five minutes, each participant wrote down as many words as they could recall. Zara's results are shown below.

Group	Mean number of words recalled (out of 10)
Acronym group	7.8
Control group	5.4

a. Write a suitable operationalised hypothesis for Zara's investigation. 3 marks

b. Identify the experimental design Zara used (within-subjects, between-subjects or mixed), and justify your answer. 2 marks

c. Name the sampling technique Zara used to recruit her participants, and explain how it limits the external validity of her findings. 2 marks

d. With reference to the mean scores in the table, state whether Zara's results support her hypothesis. 1 mark

Question 9 (10 marks)

Over a demanding twelve-week period, two nurses — Bianca and Kofi — worked side by side in the same busy emergency department. A workplace study measured each nurse's salivary cortisol (a stress hormone) at the start and end of the twelve weeks, and asked each nurse to rate how well they felt they were coping (0 = not coping at all, 10 = coping very well). The results are shown below.

Nurse	Cortisol, week 1	Cortisol, week 12	Self-rated coping, week 12
Bianca	moderate	high	3
Kofi	moderate	moderate	8

Bianca described the workload as an overwhelming threat that she "could never get on top of", and by week 12 she was frequently unwell and exhausted. Kofi appraised the same workload as a demanding but manageable challenge, drew on his colleagues for support, and remained well.

Analyse the two nurses' experiences using Selye's General Adaptation Syndrome and Lazarus and Folkman's Transactional Model of Stress and Coping. In your response, refer to the data provided and evaluate what each model contributes to explaining the difference between Bianca and Kofi.

End of Section B

End of examination questions

Section A — answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	11	D	21	B	31	C
2	C	12	C	22	D	32	B
3	A	13	A	23	A	33	D
4	D	14	D	24	C	34	C
5	C	15	A	25	B	35	C
6	A	16	C	26	D	36	A
7	B	17	B	27	B	37	D
8	D	18	D	28	A	38	B
9	C	19	B	29	D	39	A
10	A	20	A	30	B	40	C

Q1. B — a rapid, involuntary withdrawal that happens before pain is felt is a spinal reflex, coordinated by the spinal cord before the brain is involved; a movement initiated by the primary motor cortex would be voluntary and slower.

Q2. C — a pounding heart and dry mouth are sympathetic arousal responses that prepare the body for action; the somatic system controls voluntary movement, not heart rate.

Q3. A — a neuromodulator such as dopamine or serotonin acts more slowly and more broadly, adjusting how responsive many neurons across a region are; a neurotransmitter such as glutamate carries one fast signal across a single synapse.

Q4. D — LTP is the long-lasting strengthening of a synaptic connection following repeated, high-frequency stimulation; low-frequency stimulation produces LTD (weakening).

Q5. C — the elimination of rarely used synaptic connections so the remaining network works more efficiently is pruning; sprouting grows new branches, and LTP and LTD are functional changes in synaptic strength rather than the removal of connections.

Q6. A — becoming ill and exhausted with depleted resources after prolonged stress is the exhaustion stage of the GAS; resistance precedes it.

Q7. B — evaluating whether an event is a threat, harm/loss or challenge is primary appraisal; secondary appraisal is evaluating one's coping resources.

Q8. D — the gut–brain axis is a two-way link between the gut and the brain involving the vagus nerve and gut microbiota; it is not a one-way or purely hormonal pathway.

Q9. C — after repeated pairing, the latch click (originally neutral) reliably produces the response, making it the conditioned stimulus; the feed is the UCS.

Q10. A — conditioning is most effective when the neutral stimulus is presented just before the UCS, so it can act as a signal; simultaneous or backward presentation is weak.

Q11. D — handing over the snack removes the aversive whining, so Callum's behaviour is negatively reinforced (strengthened by removal of an unpleasant stimulus).

Q12. C — removing a pleasant stimulus to decrease a behaviour is negative punishment (response cost); reinforcement would increase the behaviour.

Q13. A — actively watching and concentrating on the model is the attention stage; retention is forming a mental representation, and reproduction is physically performing the behaviour.

Q14. D — songlines are a multimodal (song, narrative, place and Country) system for encoding and transmitting knowledge; they are not a post-colonial or list-only technique.

Q15. A — unrehearsed information in short-term memory is quickly lost through decay or displacement; only rehearsed information is transferred to long-term memory.

Q16. C — the hippocampus consolidates a new explicit memory but does not hold it permanently: once consolidated it is stored across the neocortex. The amygdala attaches emotional significance and the cerebellum supports implicit procedural memory.

Q17. B — a general fact recalled without its learning context is a semantic memory; an episodic memory would include the time and place of learning.

Q18. D — the same episodic system used to recall past events is used to construct imagined futures, so difficulty with one is linked to difficulty with the other.

Q19. B — aphantasia is a reduced or absent ability to voluntarily form mental images; it is not the same as amnesia or Alzheimer's disease.

Q20. A — associating items with familiar physical locations along a route is the method of loci; an acronym uses first letters and chunking groups items.

Q21. B — a psychological construct cannot be observed directly; sleep is inferred from measurable physiological and behavioural indicators. It is not measured directly like height, and brain activity continues during sleep.

Q22. D — awake-like (high-frequency, low-amplitude) brain waves combined with muscle atonia identify REM sleep, not any NREM stage.

Q23. A — the EEG records brain-wave activity, so it shows the slow, high-amplitude delta waves of Stage 3; the EOG records eye movement and the EMG records muscle activity.

Q24. C — the EMG records muscle activity/tone, so it detects the atonia of REM sleep; the EEG records the brain and the EOG records the eyes.

Q25. B — a rhythm with a period of about 24 hours is a circadian rhythm; an ultradian rhythm (such as the sleep cycle) is shorter than 24 hours.

Q26. D — light is detected by the retina, which signals the SCN; the SCN then signals the pineal gland, which increases melatonin release, promoting sleep.

Q27. B — newborns sleep far more in total than adults and spend a much larger proportion of that sleep in REM (about 50%).

Q28. A — about 17 hours awake is comparable to a BAC of about 0.05; roughly 24 hours awake is comparable to about 0.10.

Q29. D — over-reacting to a minor event and being unable to control the reaction is a change in emotion and emotional control, so it is an affective effect; "circadian" is not a domain of functioning.

Q30. B — a DSPS clock is too late and must move earlier, so bright light is given in the morning to advance it; evening light would delay it further.

Q31. C — a continuum means wellbeing can move up or down over time and lie anywhere between high wellbeing and a mental health problem, not just two fixed categories.

Q32. B — resilience is shown by adapting to and recovering from adversity and restoring usual functioning; avoiding stress, never feeling upset, or depending on others are not resilience.

Q33. D — SEWB is a multidimensional and holistic framework: wellbeing is understood as connection across body, mind and emotions, family and kinship, community, culture, Country, spirituality and ancestors, not as one individual's functioning score or the mere absence of illness.

Q34. C — supportive relationships are a social protective factor; nutrition and sleep are biological, and cognitive strategies are psychological.

Q35. C — reduced GABA activity is a biological factor; catastrophic thinking is cognitive (psychological), classical conditioning is a behavioural/psychological process, and stigma is a social factor, so the other pairings are wrong.

Q36. A — catastrophic thinking maintains (perpetuates) a phobia by overestimating danger; it does not by itself cause the phobia, nor is it biological.

Q37. D — a specific phobia is a persistent, excessive fear of one object or situation, out of proportion to the actual danger, that drives avoidance and interferes with daily life. A is stress (pressure from a demanding situation), B is anxiety (apprehension about something anticipated) and C is an ordinary, proportionate fear response.

Q38. B — breathing retraining teaches slow, controlled breathing that reduces the hyperventilation and physiological arousal of a fear response; A is systematic desensitisation, C is benzodiazepine action, and D is psychoeducation.

Q39. A — the dependent variable is what is measured, here the average sleep-onset latency; whether participants followed the instructions is the independent variable.

Q40. C — the appropriate conclusion is limited to the sample and the variable measured; A, B and D overgeneralise or make claims the data do not support.

Section B — solutions

Q1. (a) Unwrapping the lunch is carried out by the **somatic nervous system**, which sends motor messages to the **skeletal muscles**; it is a **conscious (voluntary)** response. The churning of the stomach and intestines is controlled by the **autonomic nervous system** (acting on smooth muscle in the digestive organs); it is an **unconscious (involuntary)** response. **(b)** The **parasympathetic** division dominates while Hugo rests and digests, returning the body to **homeostasis** and conserving energy. Any two of: it **slows the heart rate**, **increases salivation and digestive activity (gut motility)**, **constricts the pupils**, and **slows the breathing rate**. **(c)** An **excitatory** neurotransmitter such as **glutamate** makes the postsynaptic neuron **more likely to fire** (it depolarises the membrane), whereas an **inhibitory**

neurotransmitter such as **GABA** makes the postsynaptic neuron **less likely to fire** (it hyperpolarises the membrane) — opposite effects on the same neuron.

Q2. (a) Unconditioned stimulus (UCS) = the **hot, noisy interstate drive**, which naturally produced yowling and shaking (the UCR). Because the carrier was paired with that frightening trip, the **conditioned stimulus (CS)** = **the sight of the carrier**, and the **conditioned response (CR)** = **flattening and hiding** when the carrier appears. **(b)** Aisha is using **positive reinforcement**: each time Juno performs the desired behaviour of **stepping into the carrier**, she **adds a pleasant stimulus** — a piece of fish (the consequence) — which increases the likelihood that the behaviour will be repeated. Because a pleasant stimulus is *added* after the behaviour, it is *positive* reinforcement, and over several weeks Juno enters the carrier more readily. **(c)** Any two of: **retention** (forming a mental representation of the technique), **reproduction** (physically carrying it out), **motivation** (wanting to perform it) and **reinforcement** (being rewarded for doing so).

Q3. (a) In the multi-store model, Grace's **short-term memory** can hold the carer's name for a few seconds through **maintenance rehearsal**, because STM has a limited duration (about 18–30 seconds) and a limited capacity. However, Alzheimer's disease disrupts the **transfer (consolidation) of new information from STM into long-term memory** (linked to damage to the **hippocampus**). Because the name is never durably encoded into LTM, there is nothing to retrieve the next day, so she cannot recall it. **(b) Implicit** long-term memory is retrieved **without conscious awareness** and generally **cannot be put into words** (for example procedural, "how-to" memory, supported by the cerebellum and basal ganglia), whereas **explicit** long-term memory is retrieved **consciously and can be stated** (episodic and semantic memory, dependent on the hippocampus). Playing the piano relies on **implicit** memory — which is why Grace's hands still find the keys even though she cannot consciously state when she learned the piece. **(c) Episodic memory** is the memory of **personal experiences/events** tied to a time and place — for Grace, remembering **the day she was married**. **Semantic memory** is **general knowledge or facts** independent of when they were learned — for Grace, knowing that **Canberra is the capital of Australia**. **(d)** For example, an **acronym**: the family could take the first letter of each step of the routine (for example **W**ash, **E**at, **T**ablets) and combine them into a single pronounceable word, so that recalling the one word **cues the first letter — and so the recall — of every step**, and reduces the routine to a single chunk. (An **acrostic**, in which those first letters begin the words of a memorable sentence, is equally acceptable with a matching explanation.)

Q4. (a) The **independent variable** is the **amount of sleep the night before** (normal sleep versus one night of total sleep deprivation). The **dependent variable** is **cognitive performance**, operationalised as the **mean reaction time (ms)** on the computerised task. **(b)** *It was hypothesised that university students who are totally sleep-deprived for one night will record a slower (longer) mean reaction time on the computerised task than university students who sleep normally.* (Full marks require the **population**, **both levels of the IV**, and a **directional DV**.) **(c)** The **standard deviation** indicates the **spread (variability) of the scores around the mean** — how tightly the scores are clustered. The **normal-sleep group** had the **smaller standard deviation (18 ms)**, so its results were the **more precise** (less variable). **(d)** *In this sample, one night of total sleep deprivation increased (slowed) university students' mean reaction time on the task, from 295 ms to 388 ms, indicating that the sleep deprivation impaired their cognitive performance.* (The conclusion is directional and limited to the sample.) **(e)** Any one of: obtaining **informed consent**, respecting the **right to withdraw**, maintaining a **duty of care** by monitoring participant wellbeing during the deprivation, or **debriefing** participants afterwards.

Q5. (a) Nadia is most likely experiencing a **circadian rhythm sleep disorder (shift-work type)**. It is **not sleep deprivation** because she has **adequate opportunity to sleep** (she spends enough time in bed); the problem is that her **internal circadian clock is misaligned** with the sleep-wake schedule her work demands. This is shown by the fact that she **sleeps well and feels rested on her days off**, when she is free to follow her natural night-time schedule. **(b)** Bright light is a **zeitgeber** that resets the **SCN** by **suppressing melatonin**. Exposing Nadia to **bright light during her night shift** keeps her alert and signals "daytime" to her body clock, helping to **shift (delay) her circadian rhythm** so that she can sleep during the day. Conversely, she should **avoid bright morning light** on the way home (for example by wearing sunglasses) so that the natural morning light does not pull her clock back toward a daytime-wake pattern. **(c)** Any two of: using **blackout curtains / a dark room**, keeping a **consistent daytime sleep schedule**, keeping the room **cool and quiet**, **avoiding caffeine** before sleeping, and **avoiding screens/blue light** before her daytime sleep.

Q6. (a) Levels of functioning describe how well a person copes with and participates in everyday life. When Daniel first lost his job he showed **low (impaired) functioning** — disturbed sleep, anxiety and social withdrawal meant he was **not coping well with daily demands**, placing him **lower on the mental wellbeing continuum**. Several weeks

later he showed **high functioning** — sleeping better, managing his emotions and re-engaging socially and productively (applying for jobs) — placing him **higher on the continuum**. This shows that his wellbeing is **dynamic** and can shift along the continuum over time. **(b) Resilience** is the **ability to cope with and adapt to (manage) change and uncertainty** and to restore positive functioning. An example is Daniel **reframing the job loss as a chance to retrain and gradually adjusting** rather than remaining overwhelmed. **(c) Biological** = **regular exercise** (also improved sleep); **Psychological** = his **cognitive reframing** of the setback (adaptive thinking); **Social** = the **support of his family**. **(d)** A cultural determinant such as **cultural continuity** (the maintenance and passing on of cultural knowledge, identity, language and practices across generations) — or **connection to Country, kinship and community** — can act as a **protective factor** because it provides a strong sense of **identity, belonging and meaning**. For Aboriginal and Torres Strait Islander peoples, staying connected to community, kin and cultural practices **strengthens social and emotional wellbeing** and helps to **buffer against stressors**, lowering the risk of mental health problems.

Q7. (a) Before conditioning, **being held under the water** was the **unconditioned stimulus (UCS)**, which naturally produced fear and panic (the UCR). Deep water was initially a **neutral stimulus**, but because it was present at the moment he was held under it became **associated** with the event. Through this pairing **deep water (and water-related cues such as a full pool)** became the **conditioned stimulus (CS)**, which now produces **fear (the conditioned response)** on its own. **(b)** Avoiding the weekend swims **removes or prevents the anxiety** Farid would feel near deep water. Because the avoidance is followed by **relief** (the removal of an unpleasant state), it is **negatively reinforced**, so the avoidance continues; and because Farid never stays near deep water long enough to learn that he is safe in it, his fear is **never disconfirmed**, which maintains the phobia. **(c)** The psychologist first teaches Farid a **relaxation technique**. Farid then works **up the hierarchy from the least fear-provoking step** (the photograph, rated 20) toward the most fear-provoking (standing in chest-deep water, rated 85). At each step he uses **relaxation while exposed** to the situation; because a person **cannot be deeply relaxed and highly anxious at the same time** (reciprocal inhibition), the relaxation **gradually replaces the fear response**. He only moves to the next step (for example from step 3 to step 4) once he can remain **calm at the current step**, until he can stand in chest-deep water calmly. **(d) Cognitive behavioural therapy (CBT)**. The therapist helps Farid to **identify the catastrophic thoughts** he has about deep water (for example, that he will certainly be dragged under again), **test them against the evidence** and **replace them with realistic appraisals**, while also working on the **avoidance behaviour** those thoughts drive. (Breathing retraining and benzodiazepines are *biological* interventions and psychoeducation for families is a *social* one, so none of them answers this part.)

Q8. (a) *It was hypothesised that students in Zara's year level at her school who are given an acronym to help them remember a 10-word list will recall a greater mean number of words than students in that same year level who are given no acronym.* (Full marks require the **population** — students in Zara's year level at her school — **both levels of the IV**, and a **directional, operationalised DV** — the mean number of words recalled out of 10.) **(b)** A **between-subjects (independent-groups) design**: each participant took part in **only one condition** (either the acronym group or the control group), with **different participants** in each group. **(c) Convenience sampling** — Zara simply used the members of the population who were **easiest for her to reach** (the students in her own classes). Because those students are **not representative** of even her whole year level (let alone other year levels, ages and schools), her results may **not generalise** beyond the students she happened to recruit, which **lowers the external validity** of the findings. **(d) Yes** — the acronym group recalled a mean of **7.8** words compared with **5.4** for the control group, a difference of **2.4 words in the predicted direction**, so the results support the hypothesis.

Assessment criteria for the 10-mark question

A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.

Criterion	What a high-scoring response shows
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Holistic band guide (out of 10):

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly accurate, well-applied terminology; clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little analysis or evaluation; assertion without evidence.
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Q9. *Model high-scoring response.*

Both nurses faced the same objective **stressor** — a demanding twelve-week workload — yet their outcomes diverged, and the two models explain **different parts** of why. **Selye's General Adaptation Syndrome (GAS)** describes the **non-specific biological** response to prolonged stress across three stages: an initial **alarm reaction** — a brief drop in resistance during **shock**, then a surge of arousal in **counter-shock** as the **sympathetic nervous system** activates the flight-or-fight-or-freeze response and the adrenal glands release **adrenaline** — then a **resistance** stage in which the body sustains **elevated cortisol** to keep coping, and finally an **exhaustion** stage in which resources are depleted and the person becomes vulnerable to illness. Both nurses would have moved through alarm into resistance during the twelve weeks. The **data** show the two nurses diverging by week 12: Bianca's cortisol rose from **moderate to high** and she was **frequently unwell and exhausted**, with a coping rating of only **3** — a pattern consistent with the **exhaustion** stage of the GAS. Kofi's cortisol stayed **moderate** and his coping rating was **8**, consistent with remaining in a manageable **resistance** stage rather than progressing to exhaustion.

However, the GAS alone cannot explain **why the same stressor produced different outcomes**, because it is non-specific and treats the response as largely biological. This is where **Lazarus and Folkman's Transactional Model of Stress and Coping** adds explanatory power, because it emphasises the **psychological appraisal** of the stressor. In **primary appraisal**, Bianca judged the workload as an **overwhelming threat** ("could never get on top of"), whereas Kofi appraised it as a **challenge** — "a demanding but manageable" one. In **secondary appraisal**, Kofi evaluated his coping resources as **adequate** and drew on **social support** from colleagues, an example of effective (approach) coping; Bianca appears to have appraised her resources as **insufficient**, leaving her distressed. The **cortisol and coping data align with these appraisals**: a threat appraisal and poor coping (Bianca) map onto rising cortisol and exhaustion, while a challenge appraisal and good coping (Kofi) map onto stable cortisol and a high coping rating.

Evaluating the two models, the GAS is a **strength** in explaining the **physiological toll** and the **predictable biological progression** toward illness — it accounts well for **why Bianca became unwell**. Its **limitation** is that, being non-specific, it **cannot explain the individual difference** between two people exposed to the *same* stressor, nor the role of thoughts and coping. The Transactional Model's **strength** is precisely that it **explains this individual difference** through appraisal and coping and incorporates psychological and situational factors; its **limitation** is that appraisals are **subjective and difficult to measure or test empirically**, and the primary and secondary appraisals overlap and change over time. **In conclusion**, the two models are **complementary rather than competing**: the Transactional Model best explains **why** the same workload was distressing for Bianca but not for Kofi (different appraisals and coping), while the GAS best explains **what happened biologically** as a result — Bianca's progression toward exhaustion and illness, evidenced by her rising cortisol and low coping. A fuller account of the nurses' experiences therefore draws on both.

Practice Examination 4

Reading time: 15 minutes. Writing time: 2 hours 30 minutes. Section A consists of 40 multiple-choice questions and is worth 40 marks. Section B is worth 80 marks. Total 120 marks. Students may not use a calculator, notes, or any formula or data sheet.

Section A

Choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. Marks are not deducted for incorrect answers. No mark will be given if more than one answer is completed for any question.

Question 1

A person touches a hot baking tray and pulls their hand away before they consciously feel the heat. Which statement best describes this response?

A. It is coordinated by the somatic nervous system acting on the brain's decision to move.

B. It is an unconscious, automatic response initiated by the spinal cord.

C. It is a voluntary response coordinated by the autonomic nervous system.

D. It is controlled by the parasympathetic nervous system returning the body to homeostasis.

Question 2

Just before going on stage, a musician notices that her heart is pounding, her mouth is dry and her palms are sweaty. These changes are produced by activation of the:

A. somatic nervous system

B. parasympathetic nervous system

C. sympathetic nervous system

D. central nervous system

Question 3

Which of the following correctly pairs a neurotransmitter with its typical effect on a postsynaptic neuron?

A. Glutamate — excitatory, making the postsynaptic neuron more likely to fire

B. GABA — excitatory, making the postsynaptic neuron more likely to fire

C. Glutamate — inhibitory, making the postsynaptic neuron less likely to fire

D. GABA — it removes the neuron's ability to respond to any neurotransmitter

Question 4

Long-term depression (LTD) is best described as:

A. the long-lasting strengthening of synaptic connections that stores new learning

B. the growth of an entirely new neuron to replace a damaged one

C. the long-lasting weakening of synaptic connections following repeated low-frequency stimulation

D. a permanent block of all neurotransmitter release

Question 5

A worker has been under intense, unrelenting work pressure for eight months and now catches colds frequently. Using the body's stress response, the most likely explanation is that:

A. short bursts of adrenaline have strengthened her immune system

B. she has remained in the alarm-reaction stage for the full eight months

C. prolonged release of cortisol has suppressed her immune function

D. her parasympathetic nervous system has been continuously activated

Question 6

A university student reports that she is stressed both by the assignment deadline her lecturer has set and by her own long-held belief that she is not clever enough to pass. These two sources of stress are best classified as, respectively:

A. an external stressor and an internal stressor

B. an internal stressor and an external stressor

C. two external stressors

D. two internal stressors

Question 7

The gut-brain axis refers to:

A. a one-way pathway that allows the brain to control digestion

B. the section of the spinal cord that controls the internal organs

C. a hormone released by the gut that shuts down the stress response

D. the bidirectional communication network linking the gastrointestinal tract and the brain

Question 8

A student first uses avoidance to cope with an argument with a friend, but when this does not help she switches to talking the problem through. Her ability to adjust her coping strategy to suit the situation is best described as:

A. approach coping

B. coping flexibility

C. context-specific effectiveness

D. the exhaustion stage of the general adaptation syndrome

Question 9

A dog begins to drool whenever it hears the squeak of the cupboard where its food is kept, because the squeak has regularly preceded feeding. After this learning, the squeak of the cupboard is the:

A. conditioned stimulus

B. unconditioned stimulus

C. neutral stimulus

D. conditioned response

Question 10

A teenager starts doing the dishes as soon as he gets home because doing so stops his parents from nagging him, and he now does the dishes more often. The removal of the nagging is an example of:

A. positive reinforcement

B. positive punishment

C. negative reinforcement

D. response cost

Question 11

A gamer loses 30 minutes of playing time each time he speaks rudely to his sister, and his rudeness then decreases. The loss of playing time is an example of:

A. negative reinforcement

B. positive punishment

C. extinction

D. response cost (negative punishment)

Question 12

A child watches an older cousin carefully pour a drink and is clearly able to copy the action, but only does so later when promised a reward. Being promised the reward relates most directly to which stage of observational learning?

A. attention

B. motivation

C. retention

D. reproduction

Question 13

Aboriginal and Torres Strait Islander approaches to learning are best described as:

A. relying mainly on written texts studied individually

B. limited to observing and imitating an expert

C. multimodal and embedded in Country, story and relationships

D. concerned only with memorising isolated facts for later recall

Question 14

In the Atkinson–Shiffrin multi-store model, sensory memory is best characterised as having:

A. unlimited capacity and a very brief duration

B. limited capacity (about 7 items) and a duration of about 18 seconds

C. unlimited capacity and a potentially lifelong duration

D. limited capacity and a lifelong duration

Question 15

Which brain region is most important for forming new explicit (declarative) long-term memories?

A. the amygdala

B. the cerebellum

C. the basal ganglia

D. the hippocampus

Question 16

Remembering that there are 26 letters in the English alphabet, and recalling your own first day at secondary school, are examples of, respectively:

A. episodic; semantic

B. semantic; episodic

C. procedural; episodic

D. semantic; procedural

Question 17

An experienced cyclist can ride smoothly while talking, without consciously thinking about balancing. The type of memory in which this well-practised skill is stored, and the brain structure it depends most heavily on, are:

A. explicit; hippocampus

B. explicit episodic; amygdala

C. implicit procedural; cerebellum

D. implicit; hippocampus

Question 18

Songlines used by Aboriginal peoples support memory by:

A. linking knowledge to sequences of locations across Country, sung as narrative

B. storing information as isolated facts unconnected to place

C. relying on written acronyms to prompt recall

D. using material rewards to strengthen the recall of information

Question 19

Sleep is regarded as a *naturally occurring* altered state of consciousness because it:

A. is deliberately brought about using a technique such as meditation

B. can be directly observed and measured in the same way as a person's height

C. involves a complete and permanent loss of awareness

D. arises on its own as part of the normal sleep-wake cycle, changing awareness without any external agent

Question 20

During REM sleep, an EEG typically shows brain-wave activity that is:

A. high in frequency and low in amplitude, resembling the awake brain

B. low in frequency and high in amplitude, like deep sleep

C. absent, because the brain is inactive

D. identical to NREM Stage 1 with no distinguishing features

Question 21

A researcher wants to confirm that a sleeper has entered REM by detecting the loss of skeletal muscle tone (atonia). The most appropriate physiological measure is the:

A. electroencephalograph (EEG)

B. electro-oculograph (EOG)

C. electromyograph (EMG)

D. sleep diary

Question 22

Which of the following is an example of an ultradian rhythm?

A. the roughly 24-hour sleep-wake cycle

B. the roughly 90-minute cycle of NREM and REM sleep across a night

C. the yearly pattern of hibernation seen in some animals

D. the monthly hormonal cycle

Question 23

Which statement about melatonin is correct?

A. It is released by the suprachiasmatic nucleus and promotes wakefulness.

B. It is released by the pineal gland and its secretion increases in bright light.

C. It is released by the hypothalamus and directly detects light entering the eye.

D. It is released by the pineal gland and its secretion increases as light decreases.

Question 24

Compared with a young adult, the sleep of a typical healthy older adult (over 65) tends to show:

A. much more time in deep NREM Stage 3 sleep

B. about 50% of total sleep spent in REM

C. less deep NREM Stage 3 sleep and more frequent night-time awakenings

D. a strong delay in the timing of sleep onset

Question 25

For two weeks during exams a university student sleeps only about four to five hours a night, although she needs about eight. Her situation is best described as:

A. total (full) sleep deprivation

B. partial sleep deprivation

C. a circadian rhythm sleep disorder

D. delayed sleep phase syndrome

Question 26

During prolonged sleep deprivation, a person may experience brief, involuntary episodes of sleep lasting only a few seconds, often without being aware of them. These episodes are known as:

A. sleep inertia

B. microsleeps

C. REM rebound

D. circadian troughs

Question 27

Zeitgebers are external cues that help to entrain the sleep-wake cycle. Apart from exposure to daylight, which pair of factors can act as zeitgebers?

A. the number of hours slept the previous night and the number of dreams recalled

B. a person's resting heart rate and blood pressure

C. the proportion of the night spent in REM and in NREM Stage 3

D. the temperature of the sleeping environment and the timing of meals

Question 28

The effects of partial sleep deprivation are usually classified as affective, behavioural or cognitive. Which of the following is best classified as a *behavioural* effect?

A. clumsy, poorly coordinated movements and increased risk-taking

B. feeling irritable and unusually low in mood

C. difficulty sustaining attention on a task

D. slower and less accurate decision-making

Question 29

Which of the following sleep-hygiene practices is correctly matched with the reason it helps?

A. Exercising vigorously right before bed — because it raises core body temperature to aid sleep onset

B. Using a bright screen in bed — because blue light stimulates the release of melatonin

C. Keeping a consistent wake-up time — because a regular light-exposure pattern acts as a zeitgeber that entrains the circadian rhythm

D. Having caffeine late at night — because it deepens NREM Stage 3 sleep

Question 30

When mental wellbeing is considered in terms of a person's *levels of functioning*, what is being assessed?

A. how well the person is able to carry out their day-to-day activities, work and relationships

B. how many stressful life events the person has experienced in the past twelve months

C. whether the person meets the diagnostic criteria for a named mental disorder

D. how much of the person's wellbeing can be attributed to inherited factors

Question 31

Resilience is considered a protective factor for mental wellbeing because it:

A. removes all sources of stress from a person's life

B. helps a person adapt to and recover from stress and adversity, restoring their usual functioning

C. guarantees that a person will never develop a mental disorder

D. is a fixed trait that a person is born with and cannot change

Question 32

For Aboriginal and Torres Strait Islander peoples, connection to Country and culture is best understood as:

A. a risk factor that reduces social and emotional wellbeing

B. a cultural determinant that can act as a protective factor for social and emotional wellbeing

C. unrelated to mental wellbeing

D. relevant only to physical health

Question 33

Insufficient activity of the neurotransmitter GABA is thought to contribute to specific phobia because GABA normally:

A. excites neurons, increasing the fear response

B. makes the postsynaptic neuron more likely to fire during fear

C. has a calming, inhibitory effect that helps to regulate anxiety

D. is released only by the amygdala during a phobic reaction

Question 34

In the behavioural (learning) explanation of specific phobia, classical conditioning and operant conditioning play which roles?

A. classical conditioning first creates the fear association; operant conditioning maintains it through avoidance

B. classical conditioning maintains the phobia; operant conditioning first creates it

C. both create the fear, and neither maintains it

D. operant conditioning creates the fear through catastrophic thinking

Question 35

In the cognitive explanation of specific phobia, a memory bias contributes to the disorder by:

A. erasing the person's memory of the feared stimulus

B. leading the person to selectively remember the feared stimulus as more dangerous than it really is

C. improving the person's recall of safe, non-threatening encounters

D. acting as a biological process involving GABA

Question 36

Systematic desensitisation is effective in treating a specific phobia because relaxation and fear:

A. cannot be experienced at the same time, so relaxation gradually replaces the fear response

B. combine to produce a stronger emotional reaction to the feared stimulus

C. are both increased each time the person faces the feared stimulus

D. are controlled entirely by benzodiazepine medication

Question 37

A limitation of using benzodiazepines to treat a specific phobia is that they:

A. permanently erase the learned fear response

B. only manage the symptoms of anxiety in the short term and can lead to tolerance or dependence

C. cannot reduce physiological arousal at all

D. block GABA and therefore increase anxiety

Question 38

A key aim of psychoeducation for the family and supporters of a person with a specific phobia is to:

A. help them understand the phobia and avoid inadvertently reinforcing avoidance behaviour

B. encourage them to help the person avoid the feared stimulus whenever possible

C. provide the person with a benzodiazepine

D. deliver the relaxation training used in systematic desensitisation

Question 39

In the social explanation of specific phobia, stigma is best described as a factor that:

A. directly triggers the phobic fear response

B. strengthens the person's GABA activity

C. is a specific environmental trigger for the phobia

D. acts as a barrier that may stop a person from seeking or continuing treatment

Question 40

A researcher wants the 120 students in her sample to include Years 7 to 12 in the same proportions as they occur in the school population she is drawing from. The most appropriate approach is:

A. random sampling, because it gives every student in the school an equal chance of being selected

B. stratified sampling, because participants are drawn from each year level in proportion to the population

C. testing every student in the school, because a sample can never be representative

D. doubling the sample to 240 students, because a larger sample is always more representative

End of Section A

Section B

Answer all questions in the spaces provided. Where a question is worth more than one mark, the response must show the depth and reasoning that the command term and the mark allocation require. Question 9 is marked as a whole (holistically) against the assessment criteria provided with its solution. Total 80 marks.

Question 1 (8 marks)

Twenty minutes before an important job interview, Rafi notices that his heart is racing, his breathing has quickened and his palms are sweaty. He thinks to himself, "This interview really matters, but I have prepared well and I know I can handle the questions."

a. Rafi's racing heart and sweaty palms are produced by the sympathetic branch of his autonomic nervous system. Explain how each of these two changes is adaptive in a stressful situation. 2 marks

b. Rafi's thought illustrates Lazarus and Folkman's transactional model of stress and coping. Using the model, explain his primary appraisal and his secondary appraisal of the interview. 4 marks

c. Rafi experiences this stress only briefly, on the day of the interview. Distinguish between acute and chronic stress, referring to one physiological difference. 2 marks

Question 2 (9 marks)

When Leah was six, a hairdresser accidentally pressed the hot barrel of a styling iron against her ear, giving her a painful burn. Now the sight and smell of a hair salon make her feel intense fear, and she refuses to go inside one.

a. Using classical conditioning, identify the unconditioned stimulus, unconditioned response, conditioned stimulus and conditioned response in the development of Leah's fear. 4 marks

b. Explain how operant conditioning, through negative reinforcement, maintains Leah's refusal to go into a salon. 3 marks

c. Leah's older cousin, Elias, sits calmly in the chair for his own haircut while Leah watches from the doorway. The following week Leah sits in the chair herself. Name and briefly describe the stage of observational learning shown when Leah sits in the chair. 2 marks

Question 3 (8 marks)

Nina is looking through photographs taken at a family reunion she attended five years ago. She can picture her grandmother's backyard and re-experience how nervous she felt meeting distant relatives for the first time. She also knows, without picturing anything, that the reunion was held in Ballarat and that her grandmother was born in Greece. Nina is now organising next year's reunion, and can vividly picture herself standing in that same backyard giving a short welcome speech.

a. Name the brain region that encodes the emotional component of Nina's memory of feeling nervous, and the region in which her long-term factual knowledge about the reunion is stored. Explain the contribution of each to her recollection. 3 marks

b. Explain how episodic and semantic memory work together to allow Nina to construct a detailed image of herself giving a speech at next year's reunion. 3 marks

c. A cousin who attended the same reunion has aphantasia. Describe how his experience of remembering that day would differ from Nina's. 2 marks

Question 4 (9 marks)

A researcher investigated whether the proportion of sleep spent in REM differs between newborns and young adults. She recorded overnight sleep for a sample of 15 newborns and 15 young adults and calculated the mean percentage of total sleep spent in REM for each group.

Group	Mean REM (% of total sleep)	Standard deviation
Newborns	50	6
Young adults	22	4

a. Identify the independent variable and the dependent variable in this investigation. 2 marks

b. Write a directional research hypothesis for this investigation. 3 marks

c. The researcher measured REM using an EEG, an EOG and an EMG rather than a sleep diary. Explain why this improves the validity of the data. 2 marks

d. State one conclusion the researcher can reasonably draw from the data. 2 marks

Question 5 (8 marks)

To study the effects of sleep deprivation, a researcher kept 12 adult volunteers awake and tested their mean reaction time on a driving-simulator task after 2, 17 and 24 hours awake.

Hours awake	Mean reaction time (ms)
2	280
17	350
24	445

a. Identify one extraneous variable the researcher should control, and explain how it could affect the results if it were left uncontrolled. 2 marks

b. Using the sleep-deprivation and blood-alcohol comparison, state what the participants' functioning after about 17 hours awake is roughly equivalent to, and name one affective and one cognitive effect they might show. 3 marks

c. The researcher concluded that "staying awake for 24 hours slows the reaction time of all adult drivers". Evaluate this conclusion, referring to the sample she used and to the task on which reaction time was measured. 3 marks

Question 6 (9 marks)

Aylin has recently started university in a new city, far from her family and community. She feels lonely and finds it hard to concentrate, but she still attends her classes and manages her daily tasks.

a. Using the mental wellbeing continuum, explain where Aylin's current state would sit, and why. 2 marks

b. Identify one biological and one psychological protective factor that could support Aylin's mental wellbeing, and for each explain briefly how it helps. 4 marks

c. For Aboriginal and Torres Strait Islander peoples, explain how connection to Country and community can function as a protective factor within a social and emotional wellbeing framework. 3 marks

Question 7 (10 marks)

When Yusuf was nine, a violent storm brought a large branch down through the roof of his bedroom while he was in the room. He now has a specific phobia of thunderstorms. As soon as he hears distant thunder his heart pounds and he thinks that "the roof will come down and I will be crushed". He checks the forecast many times a day and will not leave the house if a storm is predicted. A psychologist explains that specific phobias are best understood using a biopsychosocial model.

a. Explain how long-term potentiation contributes, as a biological factor, to the strength and persistence of Yusuf's fear response. 3 marks

b. Explain how catastrophic thinking, a cognitive factor, contributes to Yusuf's phobia. Be explicit about whether it develops or maintains the phobia. 2 marks

c. In a biopsychosocial approach, specific environmental triggers are classified as a social factor in specific phobia. Identify the specific environmental trigger in Yusuf's case and explain the part it plays. 2 marks

d. Yusuf's psychologist recommends cognitive behavioural therapy (CBT). Explain how CBT would be used to treat his phobia, referring to both its cognitive and its behavioural components. 3 marks

Question 8 (9 marks)

A clinic compared two evidence-based treatments for specific phobia. Clients with a specific phobia of spiders were allocated to either systematic desensitisation or a benzodiazepine, and their mean self-reported fear (rated out of 100) was recorded before treatment and again eight weeks later.

Treatment	Mean fear before	Mean fear after 8 weeks
Systematic desensitisation	78	34
Benzodiazepine	76	58

a. Describe how systematic desensitisation is used to treat a specific phobia. 3 marks

b. Explain how a benzodiazepine reduces anxiety, referring to GABA. 2 marks

c. With reference to the data in the table, evaluate which treatment appears more effective for producing lasting change. 2 marks

d. Some clients are also taught breathing retraining. Explain how breathing retraining helps a person manage the anxiety of a specific phobia. 2 marks

Question 9 (10 marks)

Marisa, a 34-year-old air-traffic controller, has recently moved to a permanent night-shift roster. She now sleeps only about five hours during the day and often wakes after just a few hours. Over the past two months she has felt increasingly irritable and "flat", struggles to concentrate during her shifts, and has withdrawn from her usual social activities. Her colleague, who works day shifts and sleeps about eight hours each night, seems to be coping much better.

Using your knowledge of sleep and mental wellbeing, explain how Marisa's disrupted sleep could be affecting her functioning and her mental wellbeing, and discuss protective factors and strategies that could help her. In your response, refer to relevant psychological concepts and to the differences between Marisa and her colleague.

End of Section B

End of examination questions

Section A — answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	11	D	21	C	31	B
2	C	12	B	22	B	32	B

Q	Ans	Q	Ans	Q	Ans	Q	Ans
3	A	13	C	23	D	33	C
4	C	14	A	24	C	34	A
5	C	15	D	25	B	35	B
6	A	16	B	26	B	36	A
7	D	17	C	27	D	37	B
8	B	18	A	28	A	38	A
9	A	19	D	29	C	39	D
10	C	20	A	30	A	40	B

Q1. B — a rapid withdrawal before the pain is consciously felt is an unconscious spinal reflex initiated by the spinal cord, not a voluntary somatic or autonomic response.

Q2. C — a pounding heart, dry mouth and sweaty palms are fight-flight-freeze changes produced by the sympathetic branch of the autonomic nervous system.

Q3. A — glutamate is the main excitatory neurotransmitter (it makes firing more likely); GABA is inhibitory, so the other options are incorrect.

Q4. C — LTD is the long-lasting weakening of synaptic connections following repeated low-frequency (weak) stimulation, not an absence of stimulation; the long-lasting strengthening of connections that stores new learning (A) is long-term potentiation, the opposite process.

Q5. C — months of unrelenting stress means prolonged cortisol release, which suppresses immune function; a person cannot remain in the brief alarm stage for months.

Q6. A — the deadline is imposed by someone else in the student's environment, so it is an external stressor, whereas her belief about her own ability originates within her, so it is an internal stressor.

Q7. D — the gut-brain axis is the two-way (bidirectional) communication network linking the gastrointestinal tract and the brain.

Q8. B — adjusting the coping strategy to suit the situation is coping flexibility; context-specific effectiveness (C) refers to whether a strategy matches the demands of the stressor.

Q9. A — after learning, the cupboard squeak is the conditioned stimulus; the food is the unconditioned stimulus and drooling is the conditioned response.

Q10. C — removing an aversive stimulus (the nagging) so that a behaviour increases is negative reinforcement.

Q11. D — removing a pleasant stimulus (playing time) so that a behaviour decreases is response cost (negative punishment).

Q12. B — the child can already reproduce the behaviour, so the promised reward supplies the incentive to perform it, which is the motivation stage. Motivation and reinforcement are separate stages: motivation is the anticipated incentive *before* the behaviour, whereas reinforcement is the consequence actually delivered *after* it.

Q13. C — Aboriginal and Torres Strait Islander learning is multimodal and embedded in Country, story and relationships, not solitary text-based or mere imitation.

Q14. A — sensory memory has effectively unlimited capacity but a very brief duration; about 7 items for 18 seconds (B) describes short-term memory.

Q15. D — the hippocampus is central to the formation of new explicit (declarative) long-term memories.

Q16. B — a general fact relies on semantic memory, whereas a personally experienced first day relies on episodic memory.

Q17. C — a well-practised, automatic motor skill is an implicit procedural memory, supported heavily by the cerebellum.

Q18. A — songlines link knowledge to sequences of places across Country, sung as narrative, forming a place-based oral memory system.

Q19. D — a naturally occurring altered state of consciousness arises on its own within the sleep-wake cycle, without any technique or external agent.

Q20. A — REM shows high-frequency, low-amplitude brain waves that resemble the awake brain.

Q21. C — the EMG records skeletal muscle tone and so detects REM atonia; the EOG (B) records eye movement, not muscle tone.

Q22. B — the roughly 90-minute NREM–REM cycle repeats several times within one night, so its period is less than 24 hours (ultradian).

Q23. D — melatonin is released by the pineal gland and its secretion increases as light decreases (in darkness).

Q24. C — older adults typically show less deep NREM Stage 3 sleep and more frequent night-time awakenings; about 50% REM (B) describes a newborn.

Q25. B — several nights of insufficient but non-zero sleep is partial sleep deprivation, not total deprivation or a circadian disorder.

Q26. B — brief, involuntary few-second episodes of sleep during sleep deprivation are microsleeps; sleep inertia is grogginess on waking and REM rebound is the increase in REM sleep after REM loss.

Q27. D — zeitgebers are *external* cues that entrain the body clock; besides daylight, the temperature of the sleeping environment and regular eating and drinking patterns act as zeitgebers. The other options are internal measures of sleep or of arousal, not external time cues.

Q28. A — clumsy, poorly coordinated movement and increased risk-taking are changes in what the person *does*, so they are behavioural; irritability and low mood (B) are affective, and attention (C) and decision-making (D) are cognitive.

Q29. C — a consistent wake-up time provides a regular light cue (zeitgeber) that entrains the circadian rhythm; the other options state incorrect physiology.

Q30. A — levels of functioning describe how well a person carries out their everyday activities, work and relationships; it is one of the ways of considering mental wellbeing and is independent of whether a diagnosis (C) has been made.

Q31. B — resilience protects wellbeing by helping a person adapt to and recover from adversity and restore their usual functioning; it does not remove stressors, guarantee no disorder, or stay fixed.

Q32. B — connection to Country and culture is a cultural determinant that can act as a protective factor for social and emotional wellbeing.

Q33. C — GABA is inhibitory with a calming effect that regulates anxiety, so insufficient GABA contributes to specific phobia.

Q34. A — in the learning explanation, classical conditioning first creates the fear association and operant conditioning maintains it through avoidance.

Q35. B — a memory bias maintains a phobia by making the person selectively recall the feared stimulus as more threatening or dangerous than it really is; it does not erase memories, improve recall of safe encounters, or act biologically.

Q36. A — systematic desensitisation relies on reciprocal inhibition: a person cannot be deeply relaxed and highly anxious at once, so pairing relaxation with each step of a fear hierarchy gradually replaces the fear response with calm.

Q37. B — benzodiazepines only relieve anxiety symptoms in the short term (while the drug is active) and carry a risk of tolerance and dependence, without treating the underlying learned fear.

Q38. A — psychoeducation helps supporters understand the phobia and avoid inadvertently reinforcing avoidance behaviour.

Q39. D — stigma is a social barrier that can stop a person from seeking or continuing treatment.

Q40. B — drawing participants from each stratum (year level) in proportion to the population is stratified sampling, which is what achieves the proportional representation she wants. Random sampling (A) gives equal chance of selection but does not guarantee those proportions, and simply enlarging a sample (D) does not make it representative.

Section B — solutions

Q1. (a) Both changes are **adaptive** because they prepare the body for **fight, flight or freeze**. The **racing heart** pumps blood faster, delivering **more oxygen and glucose to the skeletal muscles** so that Rafi could act quickly if he needed to. The **sweaty palms** allow the body to **shed the heat** that vigorous action would generate, keeping core temperature stable during exertion. **(b)** In the transactional model, **primary appraisal** is the person's judgement of what the situation means for them. Rafi appraises the interview as **significant and stressful** ("this interview really matters") — a mixture of **threat** (he could fail) and **challenge** (a chance to succeed). **Secondary appraisal** is his evaluation of his **coping resources and options**. Rafi judges that he **has adequate resources** to cope ("I have prepared well and can handle the questions"), so the interview is appraised as **manageable** rather than overwhelming. **(c) Acute** stress is **short-lived** and tied to a specific event, driven largely by the rapid release of **adrenaline** (the fight-flight-freeze response); **chronic** stress **persists over a long period** and involves the **sustained release of cortisol**, which can suppress immune function. Rafi's interview stress is acute. (One physiological difference: brief adrenaline surge in acute stress versus prolonged cortisol elevation in chronic stress.)

Q2. (a) Unconditioned stimulus (UCS) = the **burn** from the hot styling iron; **unconditioned response (UCR)** = the **reflexive pain, startle and fear** produced by the burn; **conditioned stimulus (CS)** = the **hair salon** (its sight and smell), originally a **neutral stimulus** that was present when she was burnt; **conditioned response (CR)** = **intense fear on seeing or entering a salon**. (Note that the burn and the salon are two *different* stimuli: the burn is the UCS because it produced pain and fear with no prior learning, whereas the salon produced fear only after being paired with it.) **(b)** Leah's avoidance is maintained by **negative reinforcement**. When she refuses to go into a salon, she **removes (prevents) the unpleasant fear and anxiety** she would feel inside one. Because avoiding produces this **relief** (the removal of an aversive internal state), the avoidance behaviour is **strengthened** and is more likely to be repeated — so she keeps avoiding and the fear is never challenged. **(c) Reproduction.** Leah physically **carries out (reproduces)** the behaviour she earlier observed Elias model; she converts the retained mental representation of his actions into the actual action, which she is physically capable of performing.

Q3. (a) The **amygdala** encodes the **emotional component** of the memory: it attached the feeling of nervousness to the events of the reunion at the time, which is why re-viewing the photographs brings back not just the scene but the **emotion** she felt. The **neocortex** is where **semantic (factual) long-term memories** are stored, so it holds her knowledge that the reunion was in Ballarat and that her grandmother was born in Greece — knowledge she can retrieve without re-experiencing the event. Together they allow the recollection to be both **factually detailed** and **emotionally coloured**. **(b)** Constructing an imagined future uses the **same two memory systems** that support recall. **Episodic** memory supplies the **personally experienced details** — the look of the backyard, how it feels to stand in front of relatives — which are **recombined** into an event that has not yet happened. **Semantic** memory supplies the **general knowledge** that makes the scene coherent — what a welcome speech is, who will be there, what a reunion involves. Because the imagined scene is **assembled from stored episodic and semantic content** rather than retrieved whole, damage to these systems impairs imagining the future as well as remembering the past. **(c) Aphantasia** is a reduced or absent an individual difference in mental imagery: the person **cannot generate pictures in the mind's eye at will**, or can do so only very faintly. Nina's cousin could still **recall the facts** of the reunion — who attended, where it was held, that he felt nervous — because semantic memory and the factual content of episodic memory are intact, but he would be unable to **"see" the backyard in his mind's eye**, so his recollection would be **without visual imagery** rather than absent.

Q4. (a) The **independent variable (IV)** is the **age group** (newborn versus young adult); the **dependent variable (DV)** is the **percentage of total sleep spent in REM**. **(b)** *Model hypothesis:* "It is hypothesised that, in the

populations from which the samples are drawn, **newborns** will spend a **higher mean percentage of total sleep in REM** than **young adults**." (Full marks require a population, both levels of the IV — newborns and young adults — and a directional DV.) **(c)** An **EEG, EOG and EMG** are **objective physiological measures** recorded directly from the brain, eyes and muscles, so they measure REM **accurately and consistently** and are far **less open to bias or memory error** than a subjective self-report sleep diary. Because they measure what they are meant to measure more truly, they **improve the validity** (and reliability) of the data. **(d)** A reasonable conclusion is that, for the samples tested, **newborns spend a substantially higher proportion of their sleep in REM (mean 50%) than young adults (mean 22%)** — roughly double. (The conclusion should stay with what the data show, not over-generalise.)

Q5. (a) A suitable **extraneous variable** is the participants' **caffeine intake** (also acceptable: prior sleep, time of day of testing, individual differences, practice on the task). If, for example, some participants consumed **caffeine**, this could **improve their reaction times independently of hours awake**, so it would **confound** the results and the researcher could not confidently attribute the slower reaction times to sleep deprivation alone. **(b)** After about **17 hours** awake, functioning is roughly equivalent to a **BAC of about 0.05**. One **affective** effect: **increased irritability/low mood**; one **cognitive** effect: **slowed reaction time / poorer concentration / impaired decision-making**. **(c)** The conclusion **goes further than the evidence supports**. First, the **sample** was only **12 adult volunteers**; a sample this small, and one that is **self-selected** (people willing to be kept awake), is unlikely to be **representative of all adult drivers**, so the finding cannot safely be **generalised** to that whole population — a conclusion limited to the participants tested, or to people similar to them, would be justified. Second, reaction time was measured on a **driving simulator**, not on the road; the simulator is a **controlled approximation** of driving, so it shows that sleep deprivation slows responses **on that task** but cannot on its own establish what happens in real traffic. A defensible conclusion is that, **for these participants**, mean reaction time on the simulator **increased as hours awake increased**, from 280 ms to 350 ms to 445 ms.

Q6. (a) Aylin would sit **between high mental wellbeing and a mental disorder**, closer to the middle of the continuum. She shows **some distress and a reduced level of functioning** (loneliness, difficulty concentrating), so she is **no longer at high wellbeing**, **but she is still coping** with daily tasks and attending classes and has **no diagnosed disorder**, so she is **not at the disorder end** either. Her position is **not fixed**: the continuum fluctuates over time with **internal and external factors**, and her difficulties are clearly linked to a current external stressor (the move). *(Responses that name the middle region of the continuum — a "mental health problem" — are equally acceptable; the marks are for the reasoning about functioning, distress and the absence of a diagnosis.)* **(b) Biological protective factor: adequate sleep** (also acceptable: adequate nutritional intake and hydration) — restorative sleep supports **mood regulation and clear thinking**, helping to buffer the effects of stress. **Psychological protective factor:** use of **cognitive behavioural strategies** (e.g. noticing and reframing unhelpful thoughts), or **mindfulness meditation** — this helps Aylin **manage negative thinking and build a sense of control**, reducing distress. **(c)** For Aboriginal and Torres Strait Islander peoples, **social and emotional wellbeing (SEWB)** is a **holistic, multidimensional** framework that includes connection to **body, mind and emotions, family and kinship, community, culture, Country and spirituality and ancestors**. Within this framework, **connection to Country and community** can act as a **cultural determinant and protective factor**: maintaining connection to Country, cultural identity, kinship and a sense of belonging supports a **strong and continuous sense of identity and belonging**, which strengthens social and emotional wellbeing and helps buffer against stress and adversity.

Q7. (a) Long-term potentiation (LTP) occurs when neurons that fire together **repeatedly and strongly** develop a **more efficient and enduring connection** at their synapses. During the storm, the neural pathway linking **storm cues (thunder, dark sky) to the fear response in the amygdala** was activated **intensely**, and it has been **re-activated every time** Yusuf hears thunder, checks the forecast or imagines the roof collapsing. Repeated co-activation makes these synapses **more efficient**, so **less stimulation is needed** to fire the pathway. This is why his fear response is now **rapid, strong and easily triggered**, and why it **persists** long after the original event — the learned fear has been **physically consolidated** in the brain. **(b) Catastrophic thinking** is **overestimating the likelihood and severity of a feared outcome** (for example, "the roof will come down and I will be crushed"). It **maintains** the phobia (rather than first developing it) by **keeping Yusuf's anxiety high** and **driving his checking and avoidance** whenever he faces or even anticipates a storm. **(c)** The **specific environmental trigger** is a **thunderstorm** (the sound of thunder, or the forecast of a storm). A specific environmental trigger is the **identifiable stimulus in the person's surroundings that sets off the phobic response**: it is what **cues** Yusuf's fear on any given occasion, and because it is **external to him and part of the environment he lives in**, it is classified as a **social** factor rather than a biological or psychological one. **(d) Cognitive behavioural therapy (CBT)** treats the phobia by working on **both thoughts and behaviour**. The **cognitive** component helps Yusuf **identify and challenge** his unrealistic thoughts — testing "the roof will come down

and I will be crushed" against the evidence and **replacing it with a more realistic appraisal** of how likely storm damage actually is. The **behavioural** component has him **gradually change what he does** — reducing the repeated forecast-checking and **progressively facing** storm-related situations (such as recordings of thunder, then staying home during light rain) instead of avoiding them. Because he stops avoiding, he **experiences storms without the catastrophe occurring**, which **disconfirms the feared belief** and allows the anxiety to fall.

Q8. (a) Systematic desensitisation gradually replaces the fear response with relaxation (**counterconditioning**). The client is first taught a **relaxation technique**; a **fear hierarchy** is constructed (a ranked list of increasingly anxiety-provoking spider situations); the client then works **step by step up the hierarchy**, **pairing relaxation with each stage** and only moving to the next step once calm, until even the most feared situation can be faced while remaining relaxed. **(b)** A **benzodiazepine** is a **GABA agonist**: it **enhances the inhibitory effect of GABA** at the synapse, **increasing neural inhibition** and producing a **calming effect** that reduces anxiety in the short term. **(c)** *Evaluation.* The two groups began at **almost the same level** of fear (78 and 76), so the groups are comparable at baseline and the change scores can be compared directly. Systematic desensitisation produced a **much larger fall in mean fear** — from 78 down to 34, a reduction of **44** — than the benzodiazepine, which fell from 76 to 58, a reduction of only **18**. Because the second measurement was taken **eight weeks after treatment began**, the data indicate that **systematic desensitisation is the more effective of the two for producing lasting change**: it teaches a new, enduring response to the feared stimulus, whereas the drug produced less than half as much improvement over the same period. (The data cannot show what would happen to either group after treatment stopped, which is a limitation of this comparison.) **(d) Breathing retraining** teaches the client to **breathe slowly and deeply from the diaphragm** instead of the rapid, shallow over-breathing (hyperventilation) that accompanies a fear response. Correcting the breathing pattern **reduces the physiological arousal** of the fear response — slowing the heart rate and easing dizziness and chest tightness — so the client is able to **stay in the situation and regain a sense of control** rather than fleeing. It manages the **symptoms** of phobic anxiety; it does not by itself remove the underlying learned fear.

Assessment criteria for the 10-mark question

A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly accurate, well-applied terminology;

Band	Marks	Descriptor
		clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little analysis or evaluation; assertion without evidence.
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Q9. *Model high-scoring response (10 marks).*

Marisa's move to permanent night shift has created a **mismatch between her internal circadian rhythm and her required sleep-wake schedule**, a **circadian rhythm sleep disorder** associated with shift work. Her body clock, the **suprachiasmatic nucleus**, is still set to promote **melatonin** release and sleepiness at night, yet she must work through the night and try to sleep during the day when daylight is suppressing melatonin. As a result she sleeps only about five hours and wakes early, so she is also experiencing **partial sleep deprivation** — she is regularly getting well below the sleep she needs.

This disrupted sleep would affect Marisa across the **affective, behavioural and cognitive domains of functioning**. Affectively, she has become **irritable and "flat"**, consistent with the mood effects of sleep loss. Cognitively, she **struggles to concentrate**, showing the impaired attention and decision-making that sleep deprivation produces — indeed, research comparing sleep loss with alcohol suggests that after around **17 hours awake** a person's concentration and mood are impaired to a level comparable to a **BAC of about 0.05**, a serious concern for someone making safety-critical decisions in air-traffic control. Behaviourally, she has **withdrawn from her usual social activities**.

These changes also affect Marisa's **mental wellbeing**. On the **mental wellbeing continuum** she appears to have **moved away from high wellbeing towards the disorder end without reaching it**: she shows persistent low mood, a **reduced level of functioning** and social withdrawal, but there is no evidence of a diagnosed disorder, and her difficulties are clearly linked to an identifiable **external factor** (the shift change). Importantly, the **relationships run in both directions** — poor sleep worsens mood and concentration, and low mood and withdrawal can in turn further disrupt sleep, so Marisa risks a self-reinforcing cycle, and her position on the continuum **fluctuates over time** as these internal and external factors interact. The comparison with her **day-shift colleague**, who sleeps about eight hours in line with her circadian rhythm and is coping well, supports the argument that it is Marisa's **disrupted, mistimed and insufficient sleep** — rather than the demands of the job itself — that is driving her decline.

Several **protective factors and strategies** could help, across the biopsychosocial domains. The biological **protective factor** most directly relevant is **adequate sleep** (supported by adequate nutritional intake and hydration), and the **strategies** for restoring it are **bright light therapy** and improved **sleep hygiene** using **zeitgebers**: timed bright light during her shift, and darkness before her daytime sleep (blackout blinds, avoiding bright screens), would help shift melatonin release so that she can sleep when she needs to, while a cool, quiet, dark room supports the drop in core body temperature that promotes sleep onset. Psychologically, **cognitive behavioural strategies** or **mindfulness meditation** would help her manage unhelpful thoughts and re-establish routine. Socially, **authentic and energising support from friends and family** — and, where possible, negotiating a **more stable roster** — would rebuild the connection that protects wellbeing. Evaluating these options, the sleep-focused strategies address the **cause** (circadian

misalignment and sleep loss), so they are likely to be the most effective starting point, with the psychological and social protective factors supporting recovery. ∴ Marisa's difficulties are best understood as a **circadian rhythm disorder plus partial sleep deprivation** that is undermining her functioning and moving her along the wellbeing continuum, and a **combined biopsychosocial approach** — beginning with realigning her sleep — offers her the best chance of recovery.

Practice Examination 5

Reading time: 15 minutes. Writing time: 2 hours 30 minutes. Section A — 40 questions, 40 marks. Section B — 80 marks. Total 120 marks. No calculator, no notes, no formula or data sheet.

Section A

Choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. Marks are not deducted for incorrect answers. No mark is given if more than one answer is completed for any question. Diagrams and tables are not necessarily drawn to scale.

Question 1

A stroke damages one of the neural pathways in a patient's brain. Over the following months an undamaged neuron forms a new connection with another undamaged neuron, creating an alternative pathway that carries the signal around the damaged area. This form of synaptic plasticity is best described as:

A. pruning

B. long-term depression

C. rerouting

D. sprouting

Question 2

A gymnast deliberately holds a difficult handstand (i) while her heart rate rises sharply and her pupils dilate (ii). Which nervous system divisions are chiefly responsible for (i) and (ii)?

A. (i) somatic nervous system; (ii) sympathetic nervous system

B. (i) somatic nervous system; (ii) parasympathetic nervous system

C. (i) autonomic nervous system; (ii) sympathetic nervous system

D. (i) sympathetic nervous system; (ii) somatic nervous system

Question 3

Which statement best distinguishes a neuromodulator such as dopamine from a neurotransmitter such as glutamate?

A. A neuromodulator always excites the postsynaptic neuron, whereas a neurotransmitter always inhibits it

B. A neuromodulator is released into the synaptic gap, whereas a neurotransmitter is not

C. A neuromodulator affects only the neuron that released it

D. A neuromodulator alters the strength of transmission across many neurons, rather than carrying a single fast signal across one synapse

Question 4

A student claims that long-term potentiation (LTP) occurs whenever two neurons happen to fire together just once. The most accurate correction is that LTP:

A. results from a single pairing, provided the stimulus is intense enough

B. results from the repeated, high-frequency co-activation of neurons, not from a single pairing

C. is the weakening of synaptic connections that follows disuse

D. occurs only within the spinal cord

Question 5

Selye's General Adaptation Syndrome divides the alarm reaction into a shock substage followed by a counter-shock substage. During the shock substage, the body's ability to resist the stressor:

A. rises immediately above its normal level as adrenaline is released

B. stays at its normal level until the resistance stage begins

C. drops briefly below its normal level, before rising again during counter shock

D. falls permanently, marking the beginning of the exhaustion stage

Question 6

In the flight-or-fight-or-freeze response to an acute stressor, the *freeze* component is best described as:

A. a brief, involuntary state of immobility and heightened vigilance that can occur when a threat is first detected

B. a deliberate decision to take no action about a stressor

C. the return of the body to homeostasis once the threat has passed

D. the depletion of the body's resources after weeks of continuing stress

Question 7

Which statement best distinguishes acute stress from chronic stress?

A. Acute stress is always harmful, whereas chronic stress is not

B. Acute stress is produced only by internal stressors, whereas chronic stress is produced only by external ones

C. Acute stress involves no physiological arousal, whereas chronic stress does

D. Acute stress is brief, with the body returning to homeostasis soon afterwards, whereas chronic stress is prolonged and keeps the stress response activated

Question 8

Research on the gut–brain axis suggests that the gut microbiota can influence a person's brain and behaviour by:

A. directly controlling the skeletal muscles during digestion

B. sending and receiving signals that can affect mood and the stress response, partly via the vagus nerve

C. replacing the role of neurotransmitters in the central nervous system

D. storing long-term memories of past meals

Question 9

"Coping flexibility" is best defined as a person's ability to:

A. adjust or replace a coping strategy according to the demands of the particular stressful situation

B. use avoidance strategies whenever a stressor cannot be changed

C. rely consistently on one well-practised coping strategy across all situations

D. reduce the physiological arousal that a stressor produces

Question 10

A researcher argues that avoidance strategies are not always maladaptive. This claim is best supported by the idea of:

A. coping flexibility being fixed across situations

B. approach strategies always outperforming avoidance strategies

C. context-specific effectiveness — a strategy's usefulness depends on how well it fits the situation

D. the General Adaptation Syndrome

Question 11

Each evening the light above a fish tank is switched on shortly before the fish are fed. The fish now gather at the surface as soon as the light comes on, before any food appears. After conditioning, switching on the tank light is the:

A. unconditioned stimulus

B. conditioned stimulus

C. neutral stimulus

D. conditioned response

Question 12

In classical conditioning, the conditioned response and the unconditioned response:

A. are always completely different behaviours

B. are both produced by the neutral stimulus

C. must both be voluntary responses

D. are often the same or very similar behaviour, but are produced by different stimuli

Question 13

A toddler touches a hot radiator, immediately feels a sharp burning sensation, and does not touch the radiator again. In operant terms, the burning sensation acts as:

A. positive punishment — an unpleasant stimulus was added and the behaviour became less likely

B. negative punishment (response cost)

C. negative reinforcement

D. positive reinforcement

Question 14

Whether a particular consequence is a reinforcer or a punisher is determined by:

A. whether a stimulus is added or removed

B. whether the learner finds the consequence pleasant

C. its effect on the future likelihood of the behaviour, not by whether it seems pleasant or unpleasant

D. how quickly the consequence follows the behaviour

Question 15

Bandura's account of observational learning shows that learning and performance are not the same thing. This is because:

A. reinforcement must be received directly by the learner before any learning can occur

B. a person may acquire a behaviour by observing a model, yet not perform it until there is a reason to do so

C. a behaviour cannot be said to have been learnt unless it is performed immediately

D. only involuntary reflexes can be acquired by watching a model

Question 16

In Aboriginal and Torres Strait Islander ways of knowing, the term *Country* is best understood as:

A. simply the physical location where a person happens to live

B. an area of land marked out only by legal boundaries

C. the deep, interconnected relationship between people, land, waterways, sky, ancestors, culture and identity

D. a place that is important only for finding food and water

Question 17

A student memorises the 10-digit number 0455 128 946 by grouping the digits into three chunks. This is most likely to help because:

A. chunking lets more information be held within the limited capacity of short-term memory

B. chunking increases the duration of sensory memory

C. chunking transfers the number directly into procedural memory

D. chunking increases the capacity of short-term memory to 10 separate items

Question 18

Which of the following correctly matches a sensory memory store with its approximate duration?

A. iconic memory — about 3 to 4 seconds

B. echoic memory — about 0.2 to 0.4 seconds

C. echoic memory — about 3 to 4 seconds

D. iconic memory — about 18 seconds

Question 19

After surgery that damaged both hippocampi, a patient can still learn new motor skills through practice but can no longer form new memories of the facts and events of daily life. This pattern shows that:

A. the hippocampus is the permanent store of all long-term memories

B. the hippocampus is required to form new explicit memories but not new implicit procedural memories

C. procedural memories depend on the hippocampus

D. semantic memories are stored in the cerebellum

Question 20

The brain region most directly involved in forming the implicit, classically conditioned fear response seen in a specific phobia is the:

A. hippocampus

B. neocortex

C. cerebellum

D. amygdala

Question 21

Consider two ways of remembering a concert: recalling that you attended it last Saturday, including where you sat and how you felt, and recalling simply that the concert was held in Melbourne as a bare fact. These two acts of remembering draw mainly on, respectively:

A. episodic; semantic

B. semantic; episodic

C. procedural; episodic

D. episodic; procedural

Question 22

Songlines used by Aboriginal peoples support memory for large amounts of information because they:

A. rely on writing the information down in a fixed order

B. work only for remembering lists of unrelated words

C. link knowledge to sequential locations along a route and to story and song, drawing on the method of loci and elaborative associations

D. use the first letter of each item to form a single word

Question 23

Which of the following correctly describes the EEG, EOG and EMG recordings typically obtained during REM sleep?

A. low-frequency, high-amplitude activity; no eye movement; high muscle tone

B. high-frequency, low-amplitude activity; bursts of rapid eye movement; very low muscle tone

C. high-frequency, low-amplitude activity; no eye movement; high muscle tone

D. low-frequency, high-amplitude activity; rapid eye movement; low muscle tone

Question 24

A child walks around the house while still deeply asleep and cannot easily be woken. This sleepwalking is most likely to occur during:

A. REM sleep

B. NREM Stage 1

C. normal waking consciousness

D. NREM Stage 3

Question 25

Which of the following is a circadian rhythm?

A. the roughly 24-hour sleep–wake cycle governed by the suprachiasmatic nucleus

B. the roughly 90-minute cycle of NREM and REM within a single night

C. the alternation between the four sleep stages during one cycle

D. a single burst of rapid eye movement

Question 26

A patient's pineal gland is damaged. The most likely direct consequence for their sleep–wake cycle is:

A. the loss of the roughly 24-hour rhythm that times body temperature and hormone release

B. an inability to enter REM sleep at any point in the night

C. the loss of the normal night-time rise in melatonin, making it harder to feel sleepy in the evening

D. a permanent state of full sleep deprivation

Question 27

In a typical healthy adult, approximately what proportion of total sleep time is spent in REM sleep?

A. about 5%

B. about 20 to 25%

C. about 50%

D. about 75%

Question 28

Staying awake for approximately 24 hours produces impairments in concentration and mood comparable to a blood alcohol concentration of about:

A. 0.02

B. 0.05

C. 0.07

D. 0.10

Question 29

Over the past fortnight a warehouse supervisor has been sleeping about five hours a night. Minor hold-ups that she would normally shrug off now leave her visibly frustrated and close to losing her temper. The domain of functioning affected, and the type of sleep deprivation involved, are, respectively:

A. affective; partial sleep deprivation

B. cognitive; full sleep deprivation

C. affective; full sleep deprivation

D. cognitive; partial sleep deprivation

Question 30

Across a normal night's sleep in a healthy young adult, as the night progresses:

A. each successive sleep cycle shortens to about 20 minutes

B. NREM Stage 3 occupies an increasing share of each cycle

C. REM periods become longer, while NREM Stage 3 becomes shorter or drops out altogether

D. REM sleep is replaced entirely by NREM Stage 1

Question 31

A permanent night-shift worker who must sleep during the day is advised to fit blackout curtains and to get bright daylight before each shift. These measures work chiefly by:

A. increasing the total number of sleep cycles per day

B. manipulating zeitgebers so the circadian clock better aligns with the required sleep–wake schedule

C. removing the need for the suprachiasmatic nucleus to regulate melatonin

D. converting REM sleep into NREM Stage 3 sleep

Question 32

Which of the following is an example of *poor* sleep hygiene?

A. keeping a consistent bedtime and wake time, including on weekends

B. keeping the bedroom cool and dark

C. avoiding caffeine in the late afternoon and evening

D. using the bed for studying, eating and gaming as well as for sleeping

Question 33

Resilience, as a component of mental wellbeing, is best described as the ability to:

A. adapt to and recover from stress, adversity or change and to restore positive functioning

B. avoid ever experiencing stress or adversity

C. maintain exactly the same emotional state regardless of circumstances

D. function well only when external circumstances are favourable

Question 34

Which statement is most consistent with the view that mental wellbeing lies on a continuum?

A. People are permanently either mentally healthy or mentally ill

B. A diagnosed mental disorder means a person can never function well

C. A person's position can shift over time, and a person with a diagnosed disorder may still experience periods of relatively high wellbeing

D. Mental wellbeing is fixed by genetics and does not change

Question 35

In a biopsychosocial explanation of specific phobia, a *specific environmental trigger* refers to:

A. an inherited tendency towards heightened anxiety

B. a particular object, place or event that reliably sets off the phobic fear response, such as the situation in which the fear was first learnt

C. the person's belief that the worst possible outcome is certain to occur

D. the reluctance of other people to talk openly about mental illness

Question 36

Getting adequate sleep and a nutritious diet, using cognitive strategies such as reframing unhelpful thoughts, and maintaining supportive relationships are examples of which three types of protective factor, respectively?

A. psychological; biological; social

B. biological; social; psychological

C. social; psychological; biological

D. biological; psychological; social

Question 37

Mindfulness meditation is used as a psychological protective factor for mental wellbeing chiefly because it:

A. trains a person to pay deliberate, non-judgemental attention to the present moment, which reduces rumination and physiological arousal

B. removes the external stressors that a person is facing

C. increases GABA activity in the same way that a benzodiazepine does

D. replaces the need for supportive relationships with family and friends

Question 38

GABA is the brain's main inhibitory neurotransmitter. Compared with a person with typical GABA function, a person with insufficient GABA activity would be expected to show:

A. greater neural excitability and a more easily triggered fear response

B. reduced physiological arousal and less anxiety

C. slower neural firing throughout the brain

D. no change in their level of anxiety

Question 39

A psychologist notes that a client's catastrophic thinking is a factor that *perpetuates*, rather than *causes*, their specific phobia. This is because catastrophic thinking:

A. is the traumatic event that first produced the fear

B. keeps anxiety high and drives continued avoidance, maintaining the fear once it already exists

C. is a biological rather than a cognitive factor

D. classically conditions the original fear response

Question 40

A key advantage of systematic desensitisation over short-acting benzodiazepines in the treatment of a specific phobia is that systematic desensitisation:

A. produces faster relief of acute anxiety during an unavoidable encounter

B. works by enhancing the inhibitory action of GABA

C. requires no active participation from the client

D. addresses the learned fear response itself, so its benefits are more likely to last

End of Section A

Section B

Answer all questions in the spaces provided. Where more than one mark is available, full marks require the depth that the command term and mark allocation ask for. Refer to a scenario in your answer where a scenario is given. The final question (Question 9) is marked holistically against the assessment criteria provided with the solutions.

Question 1 (5 marks)

On a hot day, Lucia walks out of an air-conditioned building into bright sunlight. Within moments she begins to sweat. A few seconds later she decides to put on her sunglasses.

a. State whether Lucia's sweating is a conscious or an unconscious response, and name the part of the central nervous system that coordinates it. 2 marks

b. A student claims that Lucia's sweating is a spinal reflex. Explain why this claim is incorrect. 2 marks

c. State one advantage, for Lucia, of sweating being an unconscious response rather than one she must decide to make. 1 mark

Question 2 (7 marks)

For the past three months Tom has been caring for an unwell parent while also completing Year 12. At first he coped well, but recently he has been run-down and is repeatedly catching colds.

a. Using Selye's General Adaptation Syndrome, identify the stage Tom has most likely reached and explain why he is now frequently ill. 3 marks

b. Selye's model is a *biological* model of stress. Explain one limitation of the General Adaptation Syndrome that Lazarus and Folkman's Transactional Model of Stress and Coping addresses. 2 marks

c. Distinguish between primary appraisal and secondary appraisal. 2 marks

Question 3 (10 marks)

A researcher investigated whether the *timing* of praise affects how long primary-school students spend reading independently. Sixty Year 3 students were randomly allocated to one of two groups. In the immediate-praise group, the teacher praised each student the moment they began reading; in the delayed-praise group, praise was given only at the end of the lesson. Over two weeks the mean number of minutes each student spent reading independently per lesson was recorded.

Group	Mean reading time (minutes)	Standard deviation
Immediate praise	18.4	3.1
Delayed praise	11.2	4.0

a. Identify the independent variable and the dependent variable in this investigation. 2 marks

b. Write a hypothesis for this investigation. 3 marks

c. The researcher used an independent-groups design with random allocation to groups. Explain one advantage of randomly allocating participants to the two groups. 2 marks

d. With reference to operant conditioning, explain why immediate praise was more effective than delayed praise at increasing reading time. 3 marks

Question 4 (9 marks)

Oscar has aphantasia. Asked about his cousin's wedding three years ago, he can say accurately who was there, where it was held, what was said in the speeches and how happy he felt, but he reports that he cannot "see" any of it in his mind. He also says that when he tries to think about what his own future home might be like, he can describe in words what he would want in it but cannot picture it at all.

a. Autobiographical memory is described as *reconstructive* rather than as the replaying of a recording. Explain what this means, referring to Oscar's memory of the wedding. 3 marks

b. Explain why retrieving a personal past event and constructing a possible imagined future are thought to draw on the same memory processes, and describe how Oscar's aphantasia affects each. 4 marks

c. Explain why aphantasia is better described as a difference in the experience of mental imagery than as a loss of memory, referring to Oscar's account of the wedding. 2 marks

Question 5 (12 marks)

A researcher investigated whether reading from a brightly backlit tablet in the hour before bed affects how quickly people fall asleep. Twenty-eight adult volunteers each spent two nights in a sleep laboratory. On one night a volunteer read from a brightly backlit tablet for the hour before lights-out; on the other night the same volunteer read a printed book under dim light. The order of the two nights was reversed for half the volunteers. Sleep-onset latency (the number of minutes taken to fall asleep after lights-out) was recorded, and a saliva sample taken at 10 pm was used to measure each volunteer's melatonin level.

Condition	Mean sleep-onset latency, minutes ± SD	Mean salivary melatonin at 10 pm, pg/mL ± SD
Printed book under dim light	15 ± 5	22.4 ± 4.1
Brightly backlit tablet	32 ± 13	11.5 ± 3.6

a. Identify the independent variable and the dependent variable(s) in this investigation. 2 marks

b. Each volunteer completed both conditions. Explain one advantage of this repeated-measures design over an independent-groups design in this study. 2 marks

c. Using the data, describe the effect of reading from the backlit tablet before bed, referring to both measures. 3 marks

d. The standard deviation for sleep-onset latency is much larger in the tablet condition (13 minutes) than in the book condition (5 minutes). Explain what this tells you about the volunteers' responses in the tablet condition. 2 marks

e. On the basis of these results the researcher recommends that "all secondary schools should stop setting homework that requires a tablet". Explain why this recommendation is an *implication* rather than a conclusion, and state whether it is justified by this study. 3 marks

Question 6 (8 marks)

Jonas is 15 and rarely feels sleepy before midnight, even on nights when he goes to bed early. His grandmother, Nola, is 70; she is in bed for about eight hours each night but wakes several times before morning.

a. Describe two ways in which the typical pattern of sleep of an older adult such as Nola differs from that of an adolescent such as Jonas, referring to the total amount of sleep and to the proportion of deep NREM Stage 3 sleep. 2 marks

b. Explain why an adolescent such as Jonas typically needs more sleep than an older adult such as Nola. 2 marks

c. Explain, with reference to the *timing* of melatonin release across the life span, why Jonas does not feel sleepy until well after midnight even on nights when he goes to bed early. 2 marks

d. Nola is in bed for about eight hours but wakes several times each night. Distinguish between sleep quantity and sleep quality, and state which of the two is more affected for Nola. 2 marks

Question 7 (10 marks)

A regional health service is reviewing how it supports young people's mental wellbeing. Its current materials describe wellbeing using the biopsychosocial model alone. Working with the local Aboriginal community, the service is developing a second stream: Elders lead camps on Country, community members teach the local language, and the whole program is planned and governed by an Aboriginal community organisation that employs local staff.

a. The social and emotional wellbeing (SEWB) framework is described as multidimensional and holistic. Explain what this means, and name two elements of being that the framework recognises beyond a person's own body and mind. 4 marks

b. Cultural continuity and self-determination are cultural determinants of wellbeing. Using the new stream as an example, explain how each of these two determinants could protect the social and emotional wellbeing of young people in this community. 4 marks

c. Explain one reason why the biopsychosocial model on its own may not fully describe wellbeing for these young people. 2 marks

Question 8 (9 marks)

When Bilal was seven, a nesting magpie swooped him repeatedly as he walked home, striking his head and drawing blood. He now has a specific phobia of birds: if a bird lands near him his heart pounds and he has to get away, and each spring he adds twenty minutes to his walk to work so that he never passes the park where the birds gather. His psychologist plans to treat the phobia using systematic desensitisation.

a. Using classical conditioning, explain how Bilal's phobia may have been *precipitated* (acquired). In your answer, identify the neutral stimulus (NS), unconditioned stimulus (UCS), unconditioned response (UCR), conditioned stimulus (CS) and conditioned response (CR). 3 marks

b. Using operant conditioning, explain how the twenty-minute detour *perpetuates* (maintains) Bilal's phobia. 2 marks

c. Explain how systematic desensitisation could be used to treat Bilal's phobia, making reference to reciprocal inhibition. 4 marks

Question 9 (10 marks)

Nikhil has an intense specific phobia of dental treatment. He has avoided the dentist for six years, and his worry about the state of his teeth has become a chronic stressor that leaves him feeling constantly on edge and run-down. A clinic offers him a 10-week program combining cognitive behavioural therapy (CBT) with breathing retraining. To evaluate the program, the clinic compared a treatment group with a waitlist control group, measuring each participant's self-reported dental-anxiety score (0 = no anxiety, 100 = extreme anxiety) before and after the 10 weeks.

Group	Mean dental-anxiety score (before)	Mean dental-anxiety score (after)
Treatment (CBT + breathing retraining)	79	41
Waitlist control	77	73

Evaluate the likely usefulness of this program for Nikhil. In your response you should: use the biopsychosocial approach to explain how biological, psychological and social factors could contribute to and maintain his phobia and chronic stress; explain how CBT and breathing retraining are each thought to work; and analyse and evaluate the data provided, drawing a justified conclusion about the program's effectiveness and identifying one limitation of the evidence.

End of Section B

End of examination questions

Section A — answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	9	A	17	A	25	A	33	A
2	A	10	C	18	C	26	C	34	C
3	D	11	B	19	B	27	B	35	B
4	B	12	D	20	D	28	D	36	D
5	C	13	A	21	A	29	A	37	A
6	A	14	C	22	C	30	C	38	A
7	D	15	B	23	B	31	B	39	B
8	B	16	C	24	D	32	D	40	D

Q1. C — rerouting occurs when an undamaged neuron forms a new connection with another undamaged neuron, creating an alternative pathway around damaged tissue. Sprouting is the growth of new branches on a neuron's axon terminals or dendrites, pruning is the elimination of unused connections, and long-term depression is the lasting weakening of a synapse.

Q2. A — deliberately holding the handstand is voluntary skeletal-muscle control (somatic); the rising heart rate and dilated pupils are involuntary fight–flight–freeze arousal (sympathetic). A rising heart rate is sympathetic, not parasympathetic.

Q3. D — a neuromodulator adjusts the strength of transmission across many neurons over a wider area and longer time, rather than carrying one fast signal across a single synapse; it is not always excitatory, and it does act on other neurons.

Q4. B — LTP is the long-lasting strengthening of connections that follows *repeated*, high-frequency co-activation of neurons; a single pairing is not enough, and the weakening of connections is long-term depression.

Q5. C — in the shock substage the body has not yet mobilised its defences, so its ability to resist the stressor dips briefly *below* normal; counter shock then follows, with adrenaline raising resistance above normal. A permanent fall in resistance describes exhaustion, not shock.

Q6. A — freezing is a brief, involuntary immobility with heightened vigilance that can occur the moment a threat is detected, before the body fights or flees; it is not a deliberate choice, not the return to homeostasis, and not the resource depletion of exhaustion.

Q7. D — acute stress is brief and the body returns to homeostasis soon afterwards, whereas chronic stress persists for weeks or months and keeps the stress response activated. Acute stress is not inherently harmful, it does involve physiological arousal, and either kind of stress can arise from an internal or an external stressor.

Q8. B — the gut microbiota can influence mood and the stress response through the two-way gut–brain axis, partly via the vagus nerve; it does not control skeletal muscle, replace neurotransmitters, or store memories.

Q9. A — coping flexibility is the capacity to change or replace a strategy to suit the demands of the particular situation; relying on one fixed strategy (C) is the opposite.

Q10. C — context-specific effectiveness means a strategy's value depends on how well it fits the situation, so even an avoidance strategy can be adaptive when the stressor cannot be changed.

Q11. B — the tank light was neutral, but after repeated pairing with food it now triggers the response on its own, so it is the conditioned stimulus; food is the UCS and gathering at the surface is the response.

Q12. D — the CR and UCR are usually the same or a very similar reflexive response; they differ in the stimulus that triggers them (CS versus UCS). Classical conditioning involves involuntary, not voluntary, responses.

Q13. A — an unpleasant stimulus (the burning sensation) was *added* immediately after the behaviour and the behaviour became less likely, which is positive punishment. Nothing was removed, so neither response cost nor negative reinforcement applies, and the behaviour decreased rather than increased.

Q14. C — a consequence is classified by its *effect* on the future frequency of the behaviour, not by whether it is added or removed or whether it feels pleasant. Reinforcers increase behaviour; punishers decrease it.

Q15. B — a learner can attend to a model, form a mental representation of the behaviour and be physically able to reproduce it, yet not perform it until motivated to; what has been acquired (learning) is therefore separable from what is done (performance). Learning does not require direct reinforcement, immediate performance, or an involuntary response.

Q16. C — Country refers to the deep, interconnected relationship between people, land, waterways, sky, ancestors, culture and identity; it is far more than a physical location or a legal boundary.

Q17. A — chunking packs more information into each limited slot of short-term memory; it does not add extra slots (capacity stays about 7 ± 2), lengthen sensory memory, or bypass into procedural memory.

Q18. C — echoic (auditory) memory lasts about 3–4 seconds; iconic (visual) memory lasts only about 0.2–0.4 seconds, and 18 seconds is closer to the duration of short-term memory.

Q19. B — intact skill learning with lost new event/fact memory shows the hippocampus is needed to *form* new explicit memories but not new implicit procedural ones; it is not the permanent store, and procedural memory does not depend on it.

Q20. D — the amygdala forms the implicit, classically conditioned fear/emotional response central to a phobia; the hippocampus, neocortex and cerebellum serve other memory roles.

Q21. A — recalling the personally experienced event with its context and feelings is episodic memory; recalling the bare fact of the location is semantic memory.

Q22. C — songlines tie knowledge to ordered locations along a route and to story and song (a method-of-loci and elaboration strategy), which is why so much can be retained; they are not written, not limited to unrelated lists, and are not acronyms.

Q23. B — REM shows an awake-like EEG (high-frequency, low-amplitude), rapid eye movements on the EOG, and near-zero muscle tone (atonia) on the EMG.

Q24. D — sleepwalking occurs in deep NREM Stage 3; it cannot occur in REM because the voluntary muscles are paralysed (atonia).

Q25. A — the ~24-hour sleep–wake cycle set by the SCN is circadian; the ~90-minute cycle, the stage alternation and a single eye-movement burst are all shorter than a day (ultradian or briefer).

Q26. C — the pineal gland is the structure that secretes melatonin, so damaging it removes the normal night-time rise in the hormone that signals sleepiness. The roughly 24-hour rhythm itself is generated by the suprachiasmatic nucleus, REM sleep does not depend on the pineal gland, and a person deprived of melatonin still sleeps, just less easily at the usual time.

Q27. B — a healthy adult spends roughly 20–25% of total sleep in REM; about 50% is characteristic of a newborn, not an adult.

Q28. D — about 24 hours awake is comparable to a BAC of about 0.10; about 17 hours awake is comparable to about 0.05.

Q29. A — lowered tolerance and visible frustration are changes in emotion and emotional control (affective functioning), and a fortnight of reduced but non-zero sleep is partial (not full) sleep deprivation.

Q30. C — deep NREM Stage 3 dominates the first cycles of the night and shrinks or drops out towards morning, while REM periods lengthen across the night. The cycle stays at roughly 90 minutes throughout, and REM is not replaced by NREM Stage 1.

Q31. B — blackout curtains and timed daylight are external cues (zeitgebers) manipulated to entrain the circadian clock to the required schedule; they do not add sleep cycles, bypass the SCN, or change sleep stages.

Q32. D — good sleep hygiene keeps the bed associated with sleep alone; using it for study, meals and gaming weakens that association, so falling asleep there becomes harder. A consistent schedule, a cool dark room and limiting caffeine are all good hygiene.

Q33. A — resilience is the capacity to adapt to and recover from stress, adversity or change and to restore positive functioning; it is not the avoidance of all adversity or an unchanging emotional state.

Q34. C — a continuum view means wellbeing can move up and down over time, so a person with a diagnosed disorder can still have periods of relatively high wellbeing; the other options describe fixed categories.

Q35. B — a specific environmental trigger is the identifiable object, place or event in the person's surroundings that sets the phobic response off, and it is classified as a *social* factor. An inherited tendency to anxiety is biological, the certainty of the worst outcome is catastrophic thinking (psychological), and reluctance to talk about mental illness is stigma.

Q36. D — adequate sleep and diet are biological, cognitive reframing is psychological, and supportive relationships are social protective factors, in that order.

Q37. A — mindfulness meditation trains deliberate, non-judgemental attention to present-moment experience, which interrupts rumination and lowers physiological arousal. It does not remove the stressors themselves, does not act pharmacologically on GABA as a benzodiazepine does, and does not substitute for social support.

Q38. A — because GABA normally inhibits neurons, insufficient GABA leaves neurons more easily excited, producing greater neural excitability and a more readily triggered fear response; it would not reduce arousal or leave anxiety unchanged.

Q39. B — catastrophic thinking keeps anxiety high and fuels ongoing avoidance, *maintaining* an existing phobia; it is a cognitive factor, is not the original traumatic trigger, and does not classically condition the fear.

Q40. D — systematic desensitisation retrains the learned fear response itself, so its gains tend to last; fast acute relief and enhancing GABA are features of benzodiazepines, and it does require the client's active participation.

Section B — solutions

Q1. (a) The sweating is an **unconscious** (involuntary) response. It is coordinated by the **brain** — specifically the **hypothalamus**, which monitors body temperature. **(b)** A **spinal reflex** is a rapid, automatic response that is initiated and coordinated by the **spinal cord alone**, before the sensory message has reached the brain. Lucia's sweating is not organised this way: information about her rising body temperature travels to the **brain**, which then activates the **sympathetic** division of the autonomic nervous system to stimulate her sweat glands. Because the response is coordinated by the brain rather than by the spinal cord, it is unconscious but it is *not* a spinal reflex. (Thermoregulation is brain-mediated, which is why sweating is a common wrong answer here.) **(c)** Because it is unconscious, the sweating begins the moment her temperature starts to rise and continues for as long as it is needed, without Lucia having to notice she is overheating or give it any conscious attention — so her body temperature is regulated automatically while she gets on with everything else.

Q2. (a) Tom has most likely reached the **exhaustion** stage of the GAS. After three months of a continuing stressor his body can no longer maintain the above-normal resistance of the resistance stage because its **resources are depleted**; prolonged high **cortisol** has **suppressed his immune system**, so his resistance has dropped below normal and he is left fatigued and **vulnerable to illness** (the repeated colds). **(b)** A key limitation is that GAS is a purely **biological** model that treats the stress response as **non-specific** and takes **no account of psychological factors** — in particular, how a person **appraises or interprets** the stressor. Lazarus and Folkman's Transactional Model addresses this by placing the person's **cognitive appraisal** of the stressor and their coping resources at the centre, explaining why the *same* event stresses one person and not another. **(c)** In **primary appraisal** the person evaluates the **significance of the situation itself** — deciding whether it is irrelevant, benign/positive, or stressful (and if stressful, whether it is a harm/loss, a threat or a challenge). In **secondary appraisal** the person evaluates **their own coping resources and options** — whether they have what they need to deal with the situation. Primary appraisal is about *the stressor*; secondary appraisal is about *the person's ability to cope*.

Q3. (a) The **independent variable** is the **timing of the praise** (immediate praise versus praise delayed to the end of the lesson). The **dependent variable** is the **number of minutes each student spends reading independently per lesson**. **(b)** *Model hypothesis:* "It was hypothesised that **Year 3 primary-school students** who receive **immediate** praise while reading will spend **more minutes reading independently per lesson** than Year 3 students who receive **delayed** praise." (Full marks require the population, both levels of the IV, and a directional prediction about the DV.) **(c)** Randomly allocating participants to the two groups means each participant has an **equal chance** of being in either group, so **participant-related extraneous variables** (such as pre-existing reading ability, motivation or age) are **spread evenly** across the groups rather than being concentrated in one. This makes the groups more **equivalent** at the start, so any difference in reading time is more confidently attributed to the IV, improving **internal validity**. **(d)** In operant conditioning a behaviour is strengthened by a **reinforcer that follows it**, and reinforcement is **most effective when it is delivered immediately** after the target behaviour. In the immediate-praise group the praise (a **positive reinforcer**) came the moment a student **began reading**, so it was clearly associated with — and reinforced — that behaviour, making reading more likely to be repeated. In the delayed-praise group the praise came at the **end of the lesson**, far removed from the moment of reading and possibly following other behaviours, so the **contingency between reading and reward was weakened** and the reinforcement was less effective. This is reflected in the higher mean reading time for the immediate-praise group (18.4 versus 11.2 minutes).

Q4. (a) Calling autobiographical memory **reconstructive** means that recalling a personal past event is **not** the replaying of a stored recording. The memory is **rebuilt at the moment of retrieval** out of stored fragments, combining **episodic** detail (who was at the wedding, what was said, how happy Oscar felt) with **semantic** knowledge (general knowledge about weddings, about the venue and about his family) into a single coherent account. Because the account is assembled afresh each time rather than played back, it can be **incomplete**, and it can be **altered** by what Oscar has learnt or been told since — which is why two guests can remember the same wedding differently. **(b)** Retrieving a past personal event and constructing a possible imagined future require the **same operation**: pulling **episodic** details and **semantic** knowledge out of long-term memory and combining them into a coherent scene that is **not present in the here and now**. Imagining the future is therefore a form of construction that draws on the same stored material and the same processes as remembering — which is why people who lose the ability to recall detailed personal episodes typically also lose the ability to imagine detailed future ones. Oscar's **aphantasia** affects both in the same way and for the same reason: he can supply the **content** of the wedding, and he can describe in words what he would want in a future home, but in **neither** case does the scene appear to him as a mental image. The difficulty lies in the **imagery** that normally accompanies both remembering and imagining, not in the retrieval or construction of the information itself. **(c)** Oscar's memory of the wedding is **intact and detailed** — he accurately reports who attended, where it was held, what was said in the speeches and how he felt. What is missing is only the accompanying **visual mental image**. Aphantasia is therefore an **individual difference in the experience of mental imagery**, not a failure to encode, store or retrieve the memory.

Q5. (a) The **independent variable** is the **type of reading done in the hour before bed** — a brightly backlit tablet versus a printed book under dim light. The **dependent variables** are the **sleep-onset latency** (minutes taken to fall asleep after lights-out) and the **salivary melatonin level at 10 pm** (pg/mL). **(b)** In a repeated-measures design each volunteer serves as **their own control**, so **participant-related variables** (such as a person's usual sleep-onset time, age or sensitivity to caffeine) are **held constant** across the two conditions instead of differing between two separate groups of people. This removes them as extraneous variables and makes the comparison more **sensitive**, so the difference between the conditions can be attributed to the reading condition with greater confidence. (Reversing the order for half the volunteers controls the order effects that repeated measures would otherwise introduce.) **(c)** Reading from the backlit tablet was followed by worse outcomes on **both measures**. Mean sleep-onset latency **more than doubled**, from 15 minutes after the printed book to 32 minutes after the tablet — about 17 minutes longer — and mean salivary melatonin at 10 pm was **roughly halved**, falling from 22.4 pg/mL to 11.5 pg/mL. Volunteers therefore took substantially longer to fall asleep and had substantially less of the hormone that signals sleep onset. **(d)** The much larger standard deviation (13 minutes versus 5 minutes) shows that sleep-onset latencies were **far more spread out** — more **variable** — in the tablet condition. Volunteers were affected to **differing degrees**: some took only a little longer to fall asleep while others took a great deal longer, so the mean of 32 minutes describes the group **less closely** than the mean of 15 minutes does in the book condition. **(e)** A **conclusion** states **what the data of this study actually show** — here, that for these volunteers an hour of reading from a brightly backlit tablet before bed was followed by lower evening melatonin and a longer time to fall asleep. The recommendation about school homework goes **beyond the data** to a real-world application, which makes it an **implication**. It is **not justified** by this study: the sample was **adults in a sleep laboratory**, not secondary students; the study manipulated **light exposure in the hour immediately**

before bed, not tablet use for homework at any time of day; and it measured only how quickly people fell asleep, not learning, schoolwork or wellbeing. At most these results support advice about **screen use close to bedtime**.

Q6. (a) (i) **Total amount of sleep** — an adolescent such as Jonas typically needs about **8–10 hours** a night, whereas an older adult such as Nola typically obtains around **6–8 hours**. (ii) **Proportion of deep NREM Stage 3 sleep** — this falls markedly with age, so Nola spends much **less** of her night in NREM Stage 3 than Jonas does, and her sleep is correspondingly **lighter and more easily broken** (older adults also wake more often during the night). **(b)** Adolescence is a period of continuing **brain and physical development**: extensive synaptic **pruning** and myelination are still under way, and growth hormone is released mainly during deep NREM sleep, so a **larger total amount of sleep — and of deep sleep in particular — is required to support that development**. An older adult's brain and body are no longer developing in this way, so the demand for sleep is lower; ageing also weakens the circadian timing signal, which makes long, consolidated sleep harder to obtain. **(c) Melatonin**, released by the **pineal gland**, is the hormone that signals sleep onset; its release normally begins to rise a couple of hours before a person's usual bedtime and is **suppressed by light**. During **adolescence** this evening rise occurs about **one to two hours later** than it does in children or adults — a normal **delay of the sleep phase**. Jonas therefore has very little melatonin circulating at the time he lies down, so the **biological signal to sleep does not arrive until well after midnight**, no matter how early he goes to bed. **(d) Sleep quantity** is the **total amount** of sleep obtained; **sleep quality** is how **restorative and uninterrupted** that sleep is — whether it is continuous and contains adequate proportions of each stage, particularly deep NREM Stage 3. For Nola it is **quality** that is the more affected: she is in bed for about eight hours, so her opportunity for sleep is adequate, but because she wakes several times her sleep is **fragmented** and therefore less restorative.

Q7. (a) To call the SEWB framework **multidimensional** is to say that wellbeing is understood as arising from a person's **connections across several distinct domains at once**, not from the state of the individual's mind alone. To call it **holistic** is to say that those domains are treated as **interdependent parts of one whole**: a disruption in any one of them affects wellbeing overall, and wellbeing cannot be restored by attending to only one of them. Two elements of being that the framework recognises beyond a person's own body and mind (*any two*): **family and kinship**, **community**, **culture**, **Country**, and **spirituality and ancestors**. **(b) Cultural continuity** is the unbroken passing on of language, knowledge, lore and cultural practice from one generation to the next. In the new stream, Elders leading camps **on Country** and community members teaching the **local language** mean young people receive their culture **directly from their own people**; this protects wellbeing by giving them a secure **identity and sense of belonging** and by sustaining the connection to culture and Country that the SEWB framework treats as a domain of wellbeing in its own right. **Self-determination** is the right of Aboriginal and Torres Strait Islander peoples to make the decisions that affect their own lives and communities. Here the program is **planned and governed by an Aboriginal community organisation** that employs local staff, so the community itself decides what is offered and how; this protects wellbeing because a service a community designs and runs is far more likely to be **culturally safe, trusted and actually used**, and because the exercise of control over one's own affairs is itself associated with better health outcomes. **(c)** The biopsychosocial model locates wellbeing in the **individual** — their biology, their thoughts and their immediate social circumstances. It has no place for domains such as **connection to Country, to culture, and to ancestors and spirituality**, and it does not treat wellbeing as **collective** — as something bound up with the wellbeing of a person's family, community and people. For these young people those connections are central, so the biopsychosocial model used on its own would leave out much of what determines how well they are.

Q8. (a) By **classical conditioning**, the swooping paired a previously neutral stimulus with a fear-producing one. **Birds** (magpies) were originally a **neutral stimulus (NS)** for Bilal — they produced no fear. The **swooping attack**, in which he was struck on the head and hurt, was the **unconditioned stimulus (UCS)**, and it reflexively produced **pain and intense fear**, the **unconditioned response (UCR)**. Because the birds were present each time he was struck, birds became a **conditioned stimulus (CS)** that now, on their own, trigger **fear**, the **conditioned response (CR)**. Classical conditioning explains how the fear was first **acquired**. **(b)** By **operant conditioning**, the twenty-minute detour is **negatively reinforced**: taking it **removes or prevents** the unpleasant anxiety Bilal would feel walking past the park, and this relief makes the detour **more likely to be repeated**. Because he keeps avoiding the park, he **never has the experience of being near birds without being hurt**, so the fear is never disconfirmed and the phobia is **maintained**. **(c) Systematic desensitisation** would gradually replace Bilal's fear response with a relaxation response, in three steps. **(1)** He first **learns a relaxation technique** (such as controlled breathing or progressive muscle relaxation). **(2)** He and the therapist build a **fear hierarchy** — a ranked list of bird-related situations from least to most anxiety-provoking (for example, looking at a photograph of a magpie → listening to a recording of magpie calls → watching birds through a window → standing at the edge of the park → walking through the park in spring). **(3)** He then works

progressively up the hierarchy, using the relaxation technique to stay calm at each step and moving up only once that step can be faced calmly. It works through **reciprocal inhibition**: because a person **cannot be deeply relaxed and highly anxious at the same time**, repeatedly pairing each feared situation with relaxation gradually **replaces the fear response with a relaxation response** — and facing each step also gives Bilal the disconfirming experience his avoidance had been preventing.

Assessment criteria for the 10-mark question

A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly accurate, well-applied terminology; clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little analysis or evaluation; assertion without evidence.
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Q9. *Model high-scoring response (10 marks).*

Nikhil's difficulties can be understood through the **biopsychosocial approach**, which treats his phobia and chronic stress as the product of interacting **biological**, **psychological** and **social** factors. **Biologically**, an over-reactive fear system contributes to his intense arousal: if the inhibitory neurotransmitter **GABA** is insufficient or ineffective, the fear response is under-regulated and his physiological arousal is heightened whenever dental treatment is anticipated. His six years of unrelenting worry also represent a **chronic stressor**; sustained activation of the stress response and elevated **cortisol** (the resistance and, potentially, exhaustion stages of the General Adaptation Syndrome) helps explain why he feels constantly on edge and run-down. **Psychologically**, his phobia is maintained by learning and cognition: **avoiding** the dentist is **negatively reinforced** because it removes his anxiety, through operant conditioning, so the avoidance persists and he never learns that treatment can be tolerated; **catastrophic thinking** (imagining the worst possible outcome of a dental visit) keeps his anxiety high and *perpetuates* the phobia rather than causing it. **Socially**, if **stigma** or embarrassment discourages him from seeking help, this too helps maintain the disorder by keeping him out of treatment.

The program targets these factors at more than one level. **CBT** works **psychologically** on both the thoughts and the behaviours that keep the phobia going: its **cognitive** strand helps Nikhil **identify and challenge his catastrophic thoughts** and replace them with realistic appraisals, while its **behavioural** strand tackles **avoidance** through graded tasks in which he tests his feared predictions and learns that the feared outcome does not occur. Because CBT changes the underlying learned thoughts and behaviours, its benefits tend to **last**. **Breathing retraining** works on the **biological** arousal of the fear response: by teaching Nikhil a slow, controlled breathing technique, it lets him **reduce the hyperventilation and physiological arousal** of panic, giving him a portable coping skill he can use when facing dental treatment. Together the two address complementary levels — the arousal and the learned fear.

The data provide **evidence** for the program's effectiveness. The treatment group's mean dental-anxiety score **fell substantially**, from 79 to 41 (a drop of 38 points), whereas the waitlist control group **barely changed** (77 to 73, a drop of only 4 points). The inclusion of a **control group** strengthens the evidence: because the controls showed almost no change over the same period, the improvement in the treatment group is unlikely to be due merely to the passage of time and can be more confidently **attributed to the program**. This supports the **conclusion** that the combined CBT and breathing-retraining program was effective at reducing dental anxiety, and suggests it would likely be **useful for Nikhil**.

The evidence does, however, have **limitations**. The anxiety scores are **self-reported**, so they may be affected by social desirability or demand characteristics; only **group means** are given, with no indication of variability or of whether Nikhil resembles the average participant; and the study measures only **short-term** change immediately after 10 weeks, so it does **not** show whether the gains last or whether Nikhil would actually attend and tolerate real dental treatment. On balance, the biopsychosocial program is well matched to the biological arousal, learned avoidance and catastrophic thinking that underlie Nikhil's phobia, and the controlled data give **justified**, if provisional, support for its usefulness — a firmer conclusion would require follow-up data and behavioural (not just self-report) measures.

Practice Exam 6

Reading time: 15 minutes. Writing time: 2 hours 30 minutes.

Section A — 40 questions, 40 marks. Section B — 80 marks. Total 120 marks.

No calculator; no notes; no formula or data sheet. Diagrams are not necessarily drawn to scale.

Section A

Section A consists of 40 multiple-choice questions and is worth 40 marks. Answer all questions. Choose the response that is correct or that best answers the question. A correct answer scores 1 mark; an incorrect answer scores 0. No marks are deducted for an incorrect answer.

Questions 1 and 2 refer to the following information.

While pruning a rose bush, a gardener's fingers close on a sharp thorn. Her hand jerks back before she consciously feels the sting.

Question 1

Which statement best describes the neural control of the gardener's response?

A. The withdrawal is coordinated by the autonomic nervous system, which acts without conscious control.

B. The spinal cord initiates the withdrawal via an interneuron, and awareness of the pain follows once the message reaches the brain.

C. The primary motor cortex initiates the withdrawal, which is why it is so rapid.

D. The withdrawal is a conscious response because the skeletal (voluntary) muscles carry it out.

Question 2

In this response, the neuron that carries the command from the spinal cord to the muscle of the hand is best described as:

A. an afferent (sensory) neuron

B. an interneuron

C. a sympathetic neuron

D. an efferent (motor) neuron

Question 3

Several minutes after narrowly avoiding a collision, a driver notices that although they are trying to calm down, their heart is still pounding. Which statement best explains this?

A. Adrenaline released into the bloodstream continues to act even though parasympathetic activation has begun.

B. The parasympathetic nervous system is dominant and is increasing heart rate.

C. The sympathetic nervous system has been permanently activated.

D. The somatic nervous system is maintaining the increased heart rate.

Question 4

Which of the following statements about neurotransmitters and neuromodulators is correct?

A. Glutamate is inhibitory, while dopamine modulates the effect of other neurotransmitters.

B. GABA is the main excitatory neurotransmitter, while serotonin is excitatory only.

C. Glutamate is the main excitatory neurotransmitter, while dopamine can modulate the activity of many neurons.

D. GABA is excitatory, while serotonin acts only at a single synapse.

Question 5

Which of the following best describes sprouting as a form of neural plasticity?

A. the weakening of synaptic connections that are rarely used

B. the growth of new nerve fibres, such as axon terminals or dendritic branches, that form additional synaptic connections

C. the long-lasting strengthening of synapses following repeated, high-frequency stimulation

D. the removal of unused synaptic connections during development

Question 6

During a prolonged industrial dispute, a union negotiator copes well for many weeks, but by the end she is constantly ill and exhausted. According to Selye's General Adaptation Syndrome, her constant illness at the end is best explained because:

A. during the resistance stage her cortisol levels dropped below normal, weakening her immunity

B. she has remained in the alarm-reaction stage for the entire dispute

C. the counter-shock response has raised her resistance to all stressors above normal

D. prolonged cortisol release during the resistance stage has depleted her resources, lowering immune function in the exhaustion stage

Question 7

Another criticism sometimes made of Selye's General Adaptation Syndrome is that it:

A. focuses mainly on the psychological appraisal of the stressor

B. was based largely on research with rats, so it may not fully capture the human stress response

C. describes only the alarm-reaction stage in detail

D. proposes that a completely different physiological response occurs for every stressor

Question 8

Facing a demanding oral presentation, a student first judges it as a threat, then weighs up whether her preparation and note cards will be enough to cope. According to the transactional model of stress and coping, her judgement about whether her resources are sufficient is an example of:

A. secondary appraisal

B. primary appraisal

C. a challenge appraisal

D. approach coping

Question 9

A student receives a disappointing mark that she can still improve by resubmitting, so she makes a detailed study plan. Weeks later she receives a mark that is final and cannot be changed, so instead she talks with a friend until she feels better. She copes well on both occasions. This best illustrates:

A. that approach coping is always more effective than avoidance coping

B. context-specific effectiveness and coping flexibility

C. that emotion-focused coping is always a form of avoidance coping

D. that coping flexibility means using the same strategy in every situation

Question 10

In the gut–brain axis, the main nerve that carries signals in both directions between the gut and the brain is the:

A. optic nerve

B. spinal cord

C. sympathetic motor nerve

D. vagus nerve

Questions 11 and 12 refer to the following information.

A toddler is given a bitter liquid medicine that makes her gag. The medicine always comes in a distinctive purple syringe. After several doses, the toddler begins to gag as soon as she sees the purple syringe, before any medicine is given.

Question 11

In this example, the conditioned stimulus is:

A. the bitter taste of the medicine

B. gagging at the taste of the medicine

C. the purple syringe

D. gagging at the sight of the syringe

Question 12

Before conditioning, the purple syringe was best described as:

A. a neutral stimulus that produced no relevant response

B. a conditioned stimulus producing a conditioned response

C. an unconditioned stimulus producing an unconditioned response

D. a conditioned stimulus producing no response

Question 13

A student finds that when he hands in his work on time, his teacher stops sending him the reminder emails he finds stressful. As a result, he hands his work in on time more often. The removal of the reminder emails is an example of:

A. positive reinforcement

B. negative reinforcement

C. negative punishment (response cost)

D. positive punishment

Question 14

Each time a student talks over his teacher, the teacher gives him an extra clean-up task at the end of the lesson. His talking over the teacher becomes less frequent. This consequence is best classified as:

A. negative reinforcement

B. response cost (negative punishment)

C. positive reinforcement

D. positive punishment

Question 15

A teenager watches an online video of a complex dance several times and can clearly picture the moves in her mind, but when she tries the dance her body cannot yet perform the fast footwork. According to observational learning, the stage she has completed and the stage she has not yet achieved are, respectively:

A. attention; retention

B. reproduction; motivation

C. retention; reproduction

D. motivation; reinforcement

Question 16

Which statement best reflects an Aboriginal and Torres Strait Islander approach to learning, as understood in the study of learning?

A. Learning is embedded in relationships and Country, and knowledge is shared through story, observation and participation in shared experiences.

B. Knowledge is acquired mainly through isolated, individual trial and error.

C. Learning occurs only through formal written instruction.

D. Country refers simply to the physical location where learning happens.

Question 17

Which statement about the sensory memory register of the Atkinson–Shiffrin multi-store model is correct?

A. It has a limited capacity of about seven items.

B. It has a practically unlimited capacity but holds information for only a very brief time.

C. Information is held there for up to about 30 seconds unless it is rehearsed.

D. It stores information for a lifetime once it has been attended to.

Question 18

After damage to one brain region, a person can still form new memories of facts and events but no longer shows a fear response to a stimulus that previously frightened them, and their classically conditioned emotional memories are impaired. The region most likely damaged is the:

A. hippocampus

B. cerebellum

C. neocortex

D. amygdala

Question 19

A retired pianist with a memory disorder can no longer recall giving concerts or name the pieces she once performed, yet she can still sit at the piano and play a well-practised sonata fluently. Her preserved ability relies on:

A. episodic memory (explicit)

B. semantic memory (explicit)

C. procedural memory (implicit)

D. classically conditioned memory (implicit)

Question 20

Aboriginal songlines encode large amounts of information about navigation, resources and law across long distances. As a memory technique, songlines are best understood as functioning like:

A. the method of loci, in which information is linked to a sequence of locations along a route

B. an acronym, in which each initial letter cues a word

C. a written record that must be memorised word for word

D. an acrostic, in which the first letters spell a phrase

Question 21

A researcher wants an objective measure of how long it takes a participant to fall asleep and which sleep stages they enter. The most appropriate combination of measures is:

A. a sleep diary and a self-rating of sleep quality

B. EEG, EMG and EOG recordings

C. a video recording and a sleep diary

D. a self-report questionnaire completed on waking

Questions 22 and 23 refer to the following information.

A sleep laboratory recorded three physiological measures during two separate, unlabelled periods of one participant's night of sleep.

Period	EEG activity	EMG (muscle tone)	EOG (eye movement)
P	high-frequency, low-amplitude (awake-like)	very low (near absent)	frequent rapid bursts
Q	low-frequency, high-amplitude (delta waves)	moderate	minimal

Question 22

Period P is most likely:

A. NREM Stage 1

B. relaxed wakefulness with the eyes closed

C. REM sleep

D. NREM Stage 3

Question 23

Period Q is most likely:

A. NREM Stage 3

B. REM sleep

C. NREM Stage 1

D. normal alert wakefulness

Question 24

The daily rhythm in a person's core body temperature, which reaches its lowest point in the early hours of the morning, is an example of:

A. an ultradian rhythm

B. a zeitgeber

C. a sleep cycle

D. a circadian rhythm

Question 25

Which of the following correctly describes the regulation of the sleep-wake cycle?

A. The pineal gland detects light and signals the SCN to release melatonin.

B. The SCN detects light via the retina and, in darkness, signals the pineal gland to release melatonin.

C. Bright light stimulates the pineal gland to release more melatonin, promoting sleep.

D. Melatonin is released by the SCN and is suppressed by darkness.

Question 26

Compared with a school-aged child, a typical 16-year-old:

A. needs much less total sleep, which is why they stay up late

B. spends about 50% of sleep in REM, like a newborn

C. secretes melatonin later in the evening, delaying the natural time of sleep onset

D. has an advanced sleep phase, falling asleep earlier

Question 27

For the past month a man has spent about eight hours in bed each night, but he wakes repeatedly, rarely reaches deep sleep and feels unrefreshed every morning. His situation is best described as:

A. full sleep deprivation, because he is not reaching deep sleep

B. adequate sleep quality but poor sleep quantity

C. an ultradian rhythm, because his sleep is broken into short cycles

D. adequate sleep quantity but poor sleep quality, which can still cause partial sleep deprivation

Question 28

For two weeks a new parent sleeps only about four hours each night because of a newborn, and becomes irritable and tearful. The type of sleep deprivation involved, and the domain of functioning on which the irritability is an effect, are, respectively:

A. partial; affective

B. full; cognitive

C. partial; cognitive

D. full; affective

Question 29

A worker on a rotating roster sleeps well and feels rested on her days off, but sleeps badly and feels exhausted during her night-shift weeks. Her difficulty is best explained as:

A. delayed sleep phase syndrome

B. partial sleep deprivation only

C. a circadian rhythm sleep disorder caused by shift work

D. advanced sleep phase disorder

Question 30

In a typical healthy adult's night of sleep, as the night progresses the successive sleep cycles change so that:

A. REM periods become shorter and NREM Stage 3 periods become longer

B. REM periods become longer and NREM Stage 3 periods become shorter

C. each cycle lasts about 20 minutes and contains no REM

D. NREM Stage 1 makes up most of the second half of the night

Question 31

Which of the following best distinguishes stress, anxiety and a specific phobia?

A. All three are diagnosable mental disorders, and all three sit outside the mental wellbeing continuum.

B. Stress and anxiety are always harmful, whereas a phobia is a reasonable reaction to a genuine danger.

C. Anxiety is the response to a demand being faced now, stress is worry about a future event, and a phobia is a mild dislike of something.

D. Stress is the response to a demand being faced now, anxiety is apprehension about an anticipated threat, and a specific phobia is an intense, persistent and disproportionate fear of a particular stimulus that disrupts functioning

Question 32

A student who adapts well and recovers her usual level of functioning after a stressful exam period is demonstrating high:

A. resilience

B. social and emotional wellbeing across all seven domains

C. susceptibility to a mental health problem

D. secondary appraisal

Question 33

The social and emotional wellbeing (SEWB) framework, as it applies to Aboriginal and Torres Strait Islander peoples, is best described as:

A. identical to the biopsychosocial model, with three domains

B. concerned only with the absence of mental illness

C. a holistic, multidimensional framework that includes connection to body, mind and emotions, family and kinship, community, culture, Country and spirituality

D. focused solely on the individual's psychological state

Question 34

An Aboriginal community-controlled organisation runs an on-Country program in which Elders teach young people language, stories and cultural practices, and the community itself decides how the program is designed and run. Within the social and emotional wellbeing framework, this program is best understood as strengthening:

A. resilience, which is a biological protective factor

B. cultural continuity and self-determination, which are cultural determinants of wellbeing

C. psychoeducation, which is a social intervention for specific phobia

D. the absence of mental illness, which is what mental wellbeing consists of

Question 35

A psychologist teaches a client to notice thoughts such as "I always fail", and to identify and replace them with more balanced thoughts. This strategy is best described as:

A. mindfulness meditation

B. a biological protective factor

C. adequate nutrition

D. a cognitive behavioural strategy

Question 36

A man with a specific phobia of heights has never mentioned it to his family or his doctor, because he expects to be judged as weak, and so he has not sought treatment. This is best explained by:

A. stigma around seeking treatment, a social factor in specific phobia

B. catastrophic thinking, a cognitive factor in specific phobia

C. GABA dysfunction, a biological factor in specific phobia

D. psychoeducation, a social intervention for specific phobia

Question 37

Repeatedly pairing a phobic stimulus with a fear response can strengthen the neural connections involved, making the fear more easily triggered. This strengthening is an example of:

A. long-term depression

B. synaptic pruning

C. long-term potentiation

D. a GABA agonist effect

Question 38

In a specific phobia, avoidance of the feared stimulus helps to maintain the phobia mainly because it:

A. prevents the person from learning that the feared stimulus is actually safe

B. classically conditions an entirely new fear response

C. permanently strengthens the person's GABA activity

D. exposes the person to their most feared situation all at once

Question 39

Whenever a man with a specific phobia of wasps thinks about wasps, the memory that comes to mind most readily is the day he was badly stung as a child; the many occasions on which a wasp flew harmlessly past are much harder for him to recall. This is best described as:

A. catastrophic thinking

B. stigma around seeking treatment

C. a specific environmental trigger

D. memory bias

Question 40

A psychologist meets with the parents of a teenager who has a specific phobia. The parents have been driving her on long detours so that she never has to pass the feared situation. In working with the parents, the psychologist's main aim is to:

A. help them understand the phobia and stop accommodating and reinforcing her avoidance

B. prescribe short-acting anti-anxiety benzodiazepine agents

C. expose the teenager directly to the most feared stimulus immediately

D. replace the teenager's catastrophic thoughts by working up a fear hierarchy

End of Section A

Section B

Section B is worth 80 marks. Answer all questions in the spaces provided. Where a number of marks is shown, full marks require the depth of response that the command term and the mark allocation call for. The final question (Question 9) is a 10-mark extended response marked against the assessment criteria printed after the solutions.

Question 1 (10 marks)

A researcher investigated whether a brief "reappraisal" training program changes the stress response of first-year paramedic students during a simulated emergency. Forty students were randomly allocated to two groups: one group

completed three sessions of reappraisal training (learning to reinterpret their bodily arousal as helpful preparation rather than as a sign of danger); the other group received no such training. During a standardised simulated cardiac-arrest scenario, each student's salivary cortisol (measured in µg/dL) and self-rated stress (on a 0–10 scale) were recorded.

a. Identify the independent variable and the dependent variable(s) in this investigation. 2 marks

b. Write a hypothesis for this investigation. Your hypothesis must include the population, both levels of the independent variable, and a directional prediction for one dependent variable. 3 marks

c. With reference to the transactional model of stress and coping, explain how reappraisal training could reduce the students' stress response. Use the terms *primary appraisal* and *secondary appraisal*. 3 marks

d. Explain one advantage of measuring salivary cortisol in addition to self-rated stress. 2 marks

Question 2 (10 marks)

At a community sports club, a coach named Lauren uses several learning principles with her junior team. She first has a senior player demonstrate a new skill while the juniors watch. She praises any junior who attempts the skill. When a junior repeatedly mucks around during drills, she has that player sit out the first five minutes of Saturday's match.

a. Using the three-phase model of operant conditioning, identify the antecedent, behaviour and consequence for a junior who attempts the skill and receives praise, and name the process involved. 3 marks

b. Explain how sitting out the start of the match changes the mucking-around behaviour, and name the type of consequence.

2 marks

c. A junior named Tom learns the skill mainly by watching the senior player. Outline how Tom could learn the skill through observational learning, referring to at least three of its stages. 3 marks

d. Describe one way in which Aboriginal and Torres Strait Islander approaches to learning differ from learning by reinforcement alone. 2 marks

Question 3 (8 marks)

Ravi is an older adult with early Alzheimer's disease. He cannot remember a short shopping list that was read to him one minute ago, and he cannot recall events from the past week. However, he can still shave with his electric razor smoothly and without hesitation, and he still tenses and turns away whenever a car horn sounds close by — a reaction that has stayed with him since a near-miss on a crossing years ago.

a. Using the Atkinson–Shiffrin multi-store model, explain why Ravi cannot remember the shopping list one minute later. Refer to the relevant memory store(s). 3 marks

b. Name the brain region most associated with the formation of new explicit memories, which is typically affected early in Alzheimer's disease. 1 mark

c. Using the distinction between explicit and implicit memory, explain why Ravi can still shave without hesitation and still tenses at a nearby car horn. 4 marks

Question 4 (10 marks)

In a study of sleep restriction, 30 healthy adults were randomly allocated to sleep either 8 hours or 5 hours per night for one week. On day 7 all participants completed the same 20-minute computerised sustained-attention task and rated how irritable they had felt that day on a 0–10 scale (higher = more irritable). The table below shows the mean (± standard deviation) number of attention lapses (failures to respond to a signal) and the mean (± standard deviation) irritability rating for each group.

Group	Mean attention lapses (± SD)	Mean irritability rating (± SD)
8 hours per night	4.2 (± 1.1)	3.1 (± 0.8)
5 hours per night	9.6 (± 3.4)	6.4 (± 1.9)

a. Identify the independent variable and one dependent variable in this study. 2 marks

b. Describe what the data show about the effect of sleep restriction on the participants' performance and mood, referring to both the means and the variability (SD). 3 marks

c. After about 17 hours of continuous wakefulness, a person's cognitive functioning is comparable to that of a person with a blood alcohol concentration of 0.05. Explain what this comparison contributes to interpreting the 5-hour group's results, and name two domains of functioning affected by sleep deprivation. 3 marks

d. Distinguish between a conclusion and an implication, using this study to illustrate each. 2 marks

Question 5 (8 marks)

Ken, aged 71, regularly feels sleepy by about 7 pm and falls asleep soon after, then wakes at about 3 am and cannot get back to sleep, even though he has slept for a normal length of time and feels he has had enough sleep.

a. Explain, in terms of melatonin, why some older adults like Ken feel sleepy so early in the evening. 2 marks

b. Ken is told he may have advanced sleep phase disorder (ASPD). Distinguish ASPD from delayed sleep phase syndrome (DSPS) in terms of the direction in which the sleep-wake cycle is shifted. 2 marks

c. Describe how bright light therapy could be used to help Ken. Make the timing of the light and the direction of the phase shift explicit, and refer to the role of the suprachiasmatic nucleus (SCN). 4 marks

Question 6 (10 marks)

Jordan is a first-year university student who moved away from home this year. Over several weeks he has been feeling low, sleeping poorly and withdrawing from his friends. He has not been diagnosed with any mental disorder. A counsellor helps him build daily routines and reconnect with others.

a. Using the mental wellbeing continuum, explain where Jordan might be placed and why his position on the continuum is not fixed. 3 marks

b. Identify one biological, one psychological and one social protective factor the counsellor could help Jordan strengthen, and explain how each protects wellbeing. 3 marks

c. Explain what is meant by resilience, and how strengthening these protective factors could increase Jordan's resilience. 2 marks

d. For a client who is an Aboriginal or Torres Strait Islander person, the counsellor notes that the social and emotional wellbeing (SEWB) framework offers a more holistic view than the biopsychosocial model. Explain one limitation of relying on the biopsychosocial model alone when working with such a client. 2 marks

Question 7 (8 marks)

Elise has a specific phobia of injections. She becomes intensely fearful at the sight of a needle, and she has now cancelled a scheduled blood test four times. Her doctor refers her to a psychologist, who explains that specific phobia is best understood using a biopsychosocial approach.

a. Insufficient activity of the neurotransmitter GABA is one biological contributor to specific phobia. Explain how low GABA activity could contribute to the intensity of Elise's fear response. 2 marks

b. Each time Elise cancels an appointment her anxiety drops immediately. Using operant conditioning, explain how this perpetuates (maintains) her phobia. 2 marks

c. While waiting for an appointment Elise thinks, "I will faint and everyone will see." This is an example of catastrophic thinking. Explain the role catastrophic thinking plays in her phobia. 1 mark

d. Name one evidence-based psychological intervention for specific phobia, and describe how it would be used to help Elise.

3 marks

Question 8 (6 marks)

A clinic tested whether an app-delivered breathing-retraining program reduces the symptoms of specific phobia. Sixty adults with a diagnosed specific phobia were randomly allocated either to use the app or to a waitlist control group. Each participant's phobia-symptom score (on a 0–100 scale, where higher means more severe) was measured before the study and after eight weeks. The app group's mean score fell from 72 to 48, while the control group's mean score changed only from 70 to 68.

a. Explain why the researchers randomly allocated participants to the two groups. 2 marks

b. Identify one ethical consideration the researchers must address, and explain how they could address it. 2 marks

c. A news headline reads "App cures phobias." Explain one reason this claim goes beyond what the study can conclude. 2 marks

Question 9 (10 marks)

Daniel is a Year 12 student. For several weeks he has been staying up past 2 am to study and using his phone in bed, sleeping only about five hours a night. Over this time he has become increasingly irritable, his memory for what he studies seems to be getting worse, he feels more and more stressed and low, and his practice-exam marks have fallen. A psychologist has been working with him and has had him keep a sleep diary. The table below summarises Daniel's own diary records for the past four weeks, together with his practice-exam mark for each week.

Week	Mean sleep per night (h)	Nights the phone was used in bed	Practice-exam mark (%)
1	7.6	2	74
2	6.3	4	68
3	5.2	6	61
4	4.9	7	55

Using biopsychosocial concepts, analyse how Daniel's sleep behaviour could be contributing to his stress, his memory and his overall mental wellbeing, and evaluate the evidence-based strategies that could improve his situation. In your response, refer to sleep, the stress response and mental wellbeing, and analyse and evaluate the data provided in Daniel's sleep diary.

End of Section B

End of examination questions

Exam 6 — Section A answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	11	C	21	B	31	D
2	D	12	A	22	C	32	A
3	A	13	B	23	A	33	C
4	C	14	D	24	D	34	B
5	B	15	C	25	B	35	D
6	D	16	A	26	C	36	A
7	B	17	B	27	D	37	C
8	A	18	D	28	A	38	A
9	B	19	C	29	C	39	D
10	D	20	A	30	B	40	A

Q1. B — a spinal reflex is initiated by the spinal cord via an interneuron (fast and unconscious); pain is felt only once the signal reaches the brain, after the hand has already moved. The pathway is somatic, not autonomic.

Q2. D — the neuron carrying the motor command from the spinal cord to the muscle is efferent (motor); an afferent neuron carries sensory input in, and an interneuron connects within the cord.

Q3. A — adrenaline is a hormone that lingers in the bloodstream, so the heart keeps pounding even once parasympathetic activation begins restoring calm. The sympathetic response is not "permanent", and the somatic system controls voluntary muscle, not heart rate.

Q4. C — glutamate is the main excitatory neurotransmitter, and dopamine commonly acts as a neuromodulator influencing many neurons; GABA is inhibitory, not excitatory.

Q5. B — sprouting is the growth of new nerve fibres (axon terminals or dendritic branches) that create additional synaptic connections; weakening of connections (A) and pruning (D) reduce connections, and high-frequency strengthening (C) is LTP.

Q6. D — sustained cortisol release during the resistance stage depletes the body's resources, so immune function falls in the exhaustion stage; cortisol is elevated (not reduced) during resistance.

Q7. B — Selye's GAS was based largely on studies of rats, so it may not fully generalise to humans; GAS is biological and ignores appraisal (so A is false), it describes three stages (not only alarm), and it proposes a non-specific, same response to different stressors (so D is false).

Q8. A — judging whether one's resources are sufficient to cope is secondary appraisal; deciding whether the event is a threat is primary appraisal.

Q9. B — the same student *changes* her strategy to suit the demands of each situation (coping flexibility), and each strategy works because it fits that situation — approach coping where the mark can still be changed, emotion-focused coping where it cannot (context-specific effectiveness). No single strategy is "always" best.

Q10. D — the vagus nerve is the main pathway carrying signals in both directions between the gut and the brain in the gut–brain axis; the optic nerve, spinal cord and sympathetic motor nerves do not serve this role.

Q11. C — the purple syringe is the conditioned stimulus (CS); the bitter taste is the UCS, gagging at the taste is the UCR, and gagging at the sight of the syringe is the CR.

Q12. A — before conditioning the syringe was a neutral stimulus that produced no relevant (gagging) response.

Q13. B — removing an unpleasant stimulus (the reminder emails) so that a behaviour increases is negative reinforcement, not punishment.

Q14. D — an unpleasant stimulus (the extra clean-up task) is *added* after the behaviour and the behaviour decreases, so this is positive punishment; response cost would involve *removing* something the student valued.

Q15. C — she has formed a mental representation of the dance (retention) but cannot yet physically perform it (reproduction).

Q16. A — Aboriginal and Torres Strait Islander learning is embedded in relationships and Country and is shared through story, observation and participation; Country is far more than a physical location.

Q17. B — sensory memory has a very large capacity but an extremely brief duration; about seven items (A) and about 30 seconds (C) describe short-term memory, and lifelong storage (D) describes long-term memory.

Q18. D — the amygdala underlies conditioned fear and emotional memory; the hippocampus (which forms new explicit memories) is intact here, since he can still form new memories of facts and events.

Q19. C — playing a well-practised piece relies on procedural (implicit) memory; recalling concerts (episodic) and naming pieces (semantic) are explicit memories and are lost.

Q20. A — songlines link knowledge to a sequence of locations along a route, functioning like the method of loci; they are oral (not written) and are not acronyms or acrostics.

Q21. B — EEG, EMG and EOG are objective physiological recordings of brain, muscle and eye activity; sleep diaries and self-ratings are subjective.

Q22. C — an awake-like EEG together with near-absent muscle tone (atonia) and rapid eye bursts identifies REM sleep.

Q23. A — high-amplitude, low-frequency delta activity identifies deep NREM Stage 3.

Q24. D — a roughly 24-hour daily temperature rhythm is circadian; ultradian rhythms have periods shorter than 24 hours.

Q25. B — the SCN detects light via the retina and, in darkness, signals the pineal gland to release melatonin; the pineal gland does not detect light, and light suppresses (not stimulates) melatonin.

Q26. C — adolescents secrete melatonin later in the evening, delaying sleep onset; they do not need less sleep, do not have about 50% REM, and are phase-delayed (not advanced).

Q27. D — partial sleep deprivation is inadequate sleep in *quantity or quality*. His time in bed is adequate, but the fragmented, shallow sleep he gets is not, so he is partially sleep deprived despite eight hours in bed. Full sleep deprivation means going without sleep altogether.

Q28. A — several nights of insufficient (but not zero) sleep is partial sleep deprivation, and irritability is an affective effect.

Q29. C — sleeping well on days off but poorly during night-shift weeks indicates a circadian rhythm sleep disorder caused by shift work, not simply insufficient sleep.

Q30. B — sleep cycles are an ultradian rhythm of about 90 minutes. Deep NREM Stage 3 is concentrated in the early cycles of the night, while REM periods lengthen as the night goes on, so most REM occurs in the second half.

Q31. D — stress is the response to a demand being faced now, anxiety is apprehension about a threat that is anticipated, and a specific phobia is an intense, persistent, disproportionate fear of a particular stimulus that disrupts everyday functioning. Stress and anxiety are normal responses, not disorders, and all three are illustrated as variations along the mental wellbeing continuum.

Q32. A — adapting and recovering usual functioning after stress demonstrates resilience.

Q33. C — SEWB is a holistic, multidimensional framework spanning connection to body, mind and emotions, family and kinship, community, culture, Country and spirituality.

Q34. B — the Study Design names cultural continuity (passing on language, story and cultural practice across generations) and self-determination (communities controlling decisions that affect them) as the cultural determinants integral to the wellbeing of Aboriginal and Torres Strait Islander peoples; the program strengthens both.

Q35. D — identifying and replacing unhelpful thoughts is a cognitive behavioural strategy; mindfulness is non-judgemental present-moment attention, not thought replacement.

Q36. A — fear of being judged for having the phobia, and the resulting silence and failure to seek help, is stigma around seeking treatment — the social factor in the biopsychosocial explanation of specific phobia.

Q37. C — repeated co-activation that strengthens the synaptic pathway for a conditioned fear response is long-term potentiation; long-term depression and pruning weaken or remove connections, and a GABA agonist is a treatment, not a development factor.

Q38. A — avoidance maintains a phobia because it stops the person from ever learning that the feared stimulus is safe, so the fear is never disconfirmed (extinguished); it is not new classical conditioning, a GABA effect, or exposure.

Q39. D — threatening memories of the phobic stimulus are recalled more readily than neutral ones, so the person's recollection over-represents danger. This is memory bias, a cognitive factor; unlike catastrophic thinking (which is future-oriented), memory bias concerns the past.

Q40. A — the detours are the family accommodating the avoidance, which negatively reinforces it. Psychoeducation aims to build the family's understanding and stop them supporting avoidance; medication and direct exposure are different interventions.

Exam 6 — Section B solutions

Q1. (a) The **independent variable** is whether the students received **reappraisal training** (three sessions of training versus no training). The **dependent variable(s)** are the students' **stress response**, measured as **salivary cortisol** (μg/dL) and **self-rated stress** (0–10). **(b)** *Model hypothesis:* "It is hypothesised that first-year paramedic students who complete three sessions of reappraisal training will report a **lower** self-rated stress score during the simulated cardiac-arrest scenario than first-year paramedic students who receive no reappraisal training." (This states the **population**, **both levels** of the IV, and a **directional** prediction for the DV.) **(c)** In the **transactional model**, stress arises from the balance between **primary appraisal** (Is this situation a threat?) and **secondary appraisal** (Can I cope with it?). Reappraisal training targets **secondary appraisal**: students learn to judge that they have the skills and resources to manage the emergency, and to reinterpret their arousal as helpful rather than dangerous, which also shifts **primary appraisal** from "threat" towards "challenge". Because the demands are now judged to be **within their resources**, the appraised stress — and the stress response — is reduced. **(d)** Salivary cortisol is an **objective, physiological** measure that does not depend on the participant's willingness or ability to report accurately, so it is **not affected by self-report bias** (such as social desirability). Combining it with the subjective self-rating therefore gives a **more valid and complete** picture of the stress response than either measure alone.

Q2. (a) Antecedent: the coaching drill in which players are cued to attempt the new skill. **Behaviour:** the junior attempts the skill. **Consequence:** the coach's **praise** (a desirable stimulus is added). The process is **positive reinforcement**, which increases the likelihood the junior attempts the skill again. **(b)** Sitting the player out for the first five minutes takes away a **valued stimulus** (time playing in the match) following the mucking-around, which **decreases** that behaviour; this is **negative punishment (response cost)**. **(c)** Through observational learning, Tom must: **attention** — watch and attend closely to the senior player's demonstration; **retention** — store a mental representation of the skill so he can recall it later; **reproduction** — have the physical ability to copy the skill and actually attempt it; **motivation** — want to perform the skill; and **reinforcement** — receiving praise increases the chance he performs it again. (Any three, correctly described.) **(d)** In Aboriginal and Torres Strait Islander ways of knowing, learning is **embedded in relationships, Country and story**, and knowledge is passed on through **narrative, observation and participation in shared experiences** over time — rather than being acquired solely through the reinforcement of an individual's own behaviour.

Q3. (a) Information from the shopping list enters **sensory memory**, and if attended to it passes into **short-term memory (STM)**, which has a **limited duration** (about 18–30 seconds) and a **limited capacity**. To be recalled a minute later, the information must be **encoded into long-term memory (LTM)**. In early Alzheimer's disease this **transfer/encoding of new information into LTM is impaired**, so once the list is displaced from STM it is lost and Ravi cannot retrieve it. **(b)** The **hippocampus**. **(c)** Shaving relies on **procedural memory**, and tensing at the car horn relies on **classically conditioned memory** — both are **implicit (non-declarative)** long-term memories that do **not require conscious retrieval** and depend on regions such as the **basal ganglia and cerebellum** (procedural) and the **amygdala** (conditioned emotional response), which are relatively **spared** early in Alzheimer's. Ravi's difficulty is with **explicit (declarative)** memory — **episodic** memory for recent events and **semantic** memory — which depends on the **hippocampus**. Because implicit memories are stored and retrieved **separately** from explicit ones, his practised shaving and his conditioned flinch remain intact even though his explicit memory fails.

Q4. (a) The **independent variable** is the **amount of sleep per night** (8 hours versus 5 hours). A **dependent variable** is either the **mean number of attention lapses** on the sustained-attention task or the **mean irritability rating**. **(b)** The **5-hour group did worse on both measures**: they recorded **more than double** the attention lapses (**9.6** versus **4.2**) and were **about twice as irritable** (**6.4** versus **3.1**). The **variability was also greater** in the 5-hour group (SD **3.4** versus **1.1** for lapses; **1.9** versus **0.8** for irritability), showing that restricting sleep made the group both **worse on average** and **more inconsistent** — some restricted sleepers were affected far more than others. **(c)** The comparison provides a **benchmark** for how serious sleep-related impairment can be: sleep loss degrades cognitive functioning in much the way alcohol does, and 0.05 is already treated as too impaired to drive legally in Victoria. The 5-hour group shows the **same kinds of impairment** — more attention lapses and higher irritability — so a week of restricted sleep is a **meaningful risk**, not a trivial inconvenience. It is only a benchmark, however: the 0.05 and 0.10 equivalences are established for **hours of continuous wakefulness (full sleep deprivation)**, so the comparison **cannot be used to assign this group a particular blood alcohol figure**. Two domains of functioning affected by sleep deprivation are **cognitive** functioning (for example, the attention lapses recorded here, and poorer concentration) and **affective** functioning (for example, the irritability recorded here, and low mood). (Behavioural functioning, such as clumsiness, is also acceptable.) **(d)** A **conclusion** is a decision about what the results show **for this study** — here, that restricting

sleep to 5 hours a night for a week **worsened sustained attention and increased irritability** in these adults. An **implication** is what the findings mean **beyond the study** / their real-world significance — here, that **chronically short sleep could impair performance and mood in everyday settings** such as study, work and driving, so adequate sleep should be treated as a safety issue.

Q5. (a) Sleepiness is promoted by the hormone **melatonin**, released by the **pineal gland**. In some older adults the circadian clock shifts so that **melatonin is released earlier in the evening** than in younger adults (a sleep-phase **advance**), so the biological signal to sleep arrives early. This is why Ken feels sleepy by about 7 pm. It is an **advance in the timing** of the clock, not a reduced need for sleep. **(b)** In **ASPD** the sleep-wake cycle is shifted **earlier** than the conventional schedule (early evening sleepiness and very early waking); in **DSPS** it is shifted **later** (late sleep onset and late waking). They are shifts in **opposite directions**. **(c)** Ken's clock is set **too early**, so it must be moved **later** — a **phase delay**. Bright light should therefore be given in the **evening**. Light is detected by the **retina** and signals the **SCN** (the master clock in the hypothalamus), which **suppresses the evening release of melatonin** and resets the clock later. Repeated **evening** light therefore **delays** the timing of melatonin release and sleep onset, helping Ken stay awake later and wake later. (Morning light would advance his clock and worsen the problem.)

Q6. (a) Jordan is most likely experiencing a **mental health problem**: his low mood, poor sleep and social withdrawal are reducing his functioning, but he has **no diagnosed disorder**, so he sits **between** "mentally healthy" and "mental disorder" on the continuum. His position is **not fixed** because the continuum is **dynamic**: **internal factors** (such as his coping and thinking) and **external factors** (such as social support and stress) can move him **back towards high wellbeing** or, if unaddressed, **towards a disorder**. **(b) Biological** — a regular **sleep** routine and **adequate nutrition** (restoring the physiological basis of mood, concentration and energy). **Psychological** — **mindfulness meditation** (non-judgemental present-moment attention lowers rumination and physiological arousal), or cognitive behavioural strategies. **Social** — **authentic, supportive social connections** (reconnecting with friends provides emotional support and practical help, and a sense of belonging that buffers stress). **(c) Resilience** is the ability to **cope with, adapt to and recover** one's normal functioning in the face of stress or adversity. Strengthening these protective factors gives Jordan more **resources** (rest, adaptive thinking and support), so he can adapt to the stress of the transition and **recover his functioning more readily**. **(d)** The **biopsychosocial model** locates wellbeing **within the individual** — the biological, psychological and social factors acting on one person. The **SEWB framework** understands wellbeing as also arising from **collective and enduring connections** beyond the individual — to family and kinship, community, culture, Country, spirituality and ancestry — and as shaped by **historical, political and social determinants**, including the ongoing effects of colonisation and dispossession. Relying on the biopsychosocial model alone therefore risks **missing determinants that are central to the client's wellbeing**, and treating a collective and cultural experience as an individual problem.

Q7. (a) GABA is the brain's main **inhibitory** neurotransmitter: it makes postsynaptic neurons **less likely to fire**, and so dampens activity in the fear circuitry, including the **amygdala**. If Elise's GABA activity is **insufficient**, that inhibition is **too weak**, so the fear response is **triggered more readily and is felt more intensely** than it otherwise would be — which helps explain why the sight of a needle produces such an extreme reaction in her. **(b)** Cancelling the appointment is **avoidance**. It **removes** her unpleasant anticipatory anxiety, and that relief **negatively reinforces** the cancelling, making her more likely to cancel again. Because she never attends, the fear is never disconfirmed, so avoidance **perpetuates (maintains)** the phobia. **(c)** Catastrophic thinking (overestimating both the threat and how badly she would cope — "I will faint and everyone will see") keeps her fear and avoidance high, so it **perpetuates (maintains)** the phobia rather than causing it. **(d) Systematic desensitisation.** Elise is first taught a **relaxation technique** (for example slow, controlled breathing or progressive muscle relaxation). She and the psychologist then build a **fear hierarchy**, ranking injection-related situations from least to most frightening — for example: looking at a photograph of a syringe → holding a capped syringe → sitting in the clinic waiting room → having a swab placed on her arm → receiving the injection. She works **up the hierarchy one step at a time**, staying **relaxed** at each step before moving to the next, so that the feared stimulus becomes paired with **relaxation instead of fear** (counterconditioning) and the conditioned fear response weakens. (Also acceptable: **CBT** — identifying, challenging and replacing the catastrophic thought that she will faint and be humiliated, and testing it against evidence.)

Q8. (a) Random allocation distributes participant differences (such as phobia severity, age and motivation) **evenly** across the app and control groups, so the two groups are **equivalent at the start**. This controls **participant-related extraneous variables** and increases **internal validity**, so any difference at the end can be attributed to the **app** rather than to pre-existing differences between the groups. **(b)** One consideration is **informed consent**: participants must be told what participation involves (including that they may be placed on the **waitlist**) and must **freely agree** to take part.

(Also acceptable: offering the **waitlist group the program afterwards** (beneficence); the **right to withdraw**; or **confidentiality** of the symptom data.) **(c)** The word **"cures" overstates the finding.** The app group's symptoms **fell but did not reach zero** (a mean of 48/100 remained), the study lasted only **eight weeks with no long-term follow-up**, and the sample was a **specific group of 60 adults**. The study can therefore conclude that the app **reduced symptoms** in this sample, but it **cannot claim it "cures" phobias** or generalise so broadly — this is an **overgeneralisation** that goes beyond the study's conclusion.

Assessment criteria for the 10-mark question

The following criteria are printed in every practice examination. Question 9 is marked **holistically** against them.

What a full-mark response shows. A response scoring in the top band demonstrates all four of the following, integrated into a coherent, evidence-based answer (not four separate paragraphs):

Criterion	What a high-scoring response shows
1. Psychological terminology in a novel context	Accurately identifies, defines and applies the relevant psychological terms/concepts to the specific scenario given, not in the abstract.
2. Analysis of concepts and their connections	Analyses and discusses the relevant concepts, models or theories and explains how they connect to one another and to the scenario.
3. Analysis and evaluation of evidence	Where data, a methodology, a model or a theory is given, analyses and evaluates it — strengths, limitations and what it does/does not support.
4. Evidence-based argument and conclusions	Constructs a sustained, evidence-based argument, drawing justified conclusions and, where relevant, implications; addresses all parts of the task.

Holistic band guide (out of 10).

Band	Marks	Descriptor
Very high	9–10	All four criteria met to a high standard: precise terminology applied to the scenario, thorough analysis of connected concepts, sound evaluation of any evidence, and a well-reasoned, complete evidence-based argument with justified conclusions.
High	6–8	Most criteria met well: mostly accurate, well-applied terminology; clear analysis of concepts and connections; some evaluation of evidence; a mostly coherent argument, perhaps with a minor gap.
Medium	3–5	Some criteria met: relevant terminology with occasional error or generic (not scenario-linked) use; description more than analysis; limited evaluation; an argument that is partial or not fully supported.
Low	1–2	Few criteria met: fragmentary or largely inaccurate terminology; little analysis or evaluation; assertion without evidence.

Band	Marks	Descriptor
—	0	No creditable response.

Positive marking: award marks for what the response demonstrates against the criteria; there is no deduction for what is omitted.

Q9. *Model high-scoring response (very high band, 9–10).*

Daniel's habit of studying past 2 am and using his phone in bed is producing chronic **partial sleep deprivation** — inadequate sleep in both **quantity and quality**, against the roughly eight to ten hours an adolescent needs. Two biological mechanisms make this worse. The **blue light** from his phone **suppresses melatonin** release from the pineal gland, delaying sleep onset; and as an adolescent his circadian clock is already **phase-delayed**, so late-night light — an artificial **zeitgeber** — pushes his body clock even later. The result is sleep that is both **insufficient in amount and poorly timed**.

This partial sleep deprivation plausibly explains all three of Daniel's problems. **Cognitively**, sleep loss impairs **attention and concentration**, so less of what he reads is properly **attended to and encoded** in the first place, and retrieval under exam conditions becomes less reliable — which fits his sense that his memory is worsening and his falling marks. **Affectively**, sleep loss impairs emotional regulation, contributing to his **irritability and low mood**; **behaviourally**, it shows in lapses of attention and reduced persistence. The scale of the cognitive effect is well established: after about 17 hours of continuous wakefulness a person's cognitive functioning is comparable to a **blood alcohol concentration of 0.05**. That benchmark shows how substantially sleep loss degrades thinking, although it is a **cautious** comparison to apply here, since the 0.05 and 0.10 equivalences are established for **continuous wakefulness**, not for Daniel's pattern of chronic partial restriction.

The **sleep diary supports this analysis, but only up to a point**. Across the four weeks his mean nightly sleep falls steadily from **7.6 to 4.9 hours** while nights of phone use in bed rise from **2 to 7**, and his practice-exam mark falls in step, from **74% to 55%** — a consistent, monotonic pattern across three separate measures, which is stronger evidence than a single before-and-after comparison would be. The data are nevertheless **weak evidence of causation**. They are **self-reported** and come from a **single case**, with **no control condition** and no manipulated variable, so they are **correlational**: the association is equally consistent with the reverse direction (mounting exam stress keeping him awake) or with a **third variable** such as the papers becoming harder as the year progresses. The diary can therefore **support** the conclusion that his sleep, his phone use and his performance are declining together; it **cannot establish** that the sleep loss caused the fall in marks.

The sleep-related effects also feed a **stress cycle**. Facing declining marks, Daniel's **primary appraisal** is likely to shift towards "threat", while his **secondary appraisal** — his sense of being able to cope — weakens because he is exhausted; in the **transactional model**, his appraised stress therefore rises. Sustained stress means prolonged **cortisol** release, and if this continues he risks moving through the **resistance** stage of the General Adaptation Syndrome towards **exhaustion**, further harming his immunity and mood. On the **mental wellbeing continuum**, Daniel appears to have slipped from "mentally healthy" towards a **mental health problem** — reduced functioning without a diagnosed disorder — and because the continuum is **dynamic**, this direction is reversible.

The strongest evidence-based strategies target the **cause**. Improving **sleep hygiene** — a consistent sleep-wake schedule, removing the phone from the bedroom (managing an artificial **zeitgeber**) and dimming light before bed — directly addresses both the melatonin suppression and the phase delay identified above, and is the best-matched first-line change. Its **limitation** is that it depends entirely on Daniel's **adherence** at the very time he feels most pressed for study hours; a phase delay that has built up over weeks takes time to reverse, so he should not expect an immediate improvement in marks, and the supporting evidence comes largely from **group studies of adolescents** rather than from anything measured on Daniel himself. **Cognitive behavioural strategies** to identify and reframe catastrophic thoughts about the exams are well supported and would shift his **secondary appraisal**, but they treat the appraisal rather than the sleep loss driving it, and they require sustained effort and usually a trained practitioner. **Mindfulness** can lower arousal, but the evidence for it is more modest and it will not by itself restore lost sleep. **Reconnecting socially** provides support and belonging, yet it competes for the same scarce hours as sleep and study, so it works best once the schedule is stabilised. Across the **biopsychosocial** domains these amount to strengthening **protective factors** — adequate sleep and nutrition (**biological**), adaptive thinking (**psychological**), supportive relationships (**social**) — which together build **resilience**, his capacity to adapt to and recover from the demands of Year 12.

In conclusion, short and poorly timed sleep is the most plausible common driver of Daniel's memory, stress and wellbeing problems, and **correcting the sleep behaviour should come first**, because it is the strategy that addresses the mechanism the other strategies only work around. That judgement is **provisional**: the diary is correlational, single-case and self-reported, so the psychologist should treat improved sleep as a **testable prediction** — continue the diary and the practice-exam record and check whether marks and mood recover as sleep does. Because the wellbeing continuum is **dynamic**, that recovery is realistic; but the evidence available so far supports the plan rather than proves it.

Why this response scores in the very high band: terminology (partial sleep deprivation, melatonin, zeitgeber, appraisal, GAS, the continuum, protective factors) is applied to Daniel's specific situation; the sleep, stress, memory and wellbeing concepts are connected into a single causal argument; the sleep diary is analysed feature by feature and its strengths and limitations as evidence are evaluated; each strategy is judged with both a strength and a limitation; and the response reaches a clear, justified — and appropriately qualified — conclusion that addresses all parts of the task.