

YEAR 12 *Trial Exam Paper*

2023

PSYCHOLOGY

Written examination

Sample responses

This book presents:

- high-level sample responses
- explanatory notes
- mark allocations
- tips.

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SECTION A

Question 1

Answer: B

Explanatory notes

Option A is incorrect because serotonin's inhibitory or excitatory effect is on post-synaptic neurons. Options C and D relate to the role of dopamine as a neuromodulator.

Question 2

Answer: A

Explanatory notes

Option C is incorrect because spinal reflexes are initiated by the central nervous system (the spinal cord in particular). Options B and D are incorrect because a reflex response (shown by Jenny's action being 'instinctive') is an unconscious response at the time of activation.

Question 3

Answer: D

Explanatory notes

Option D is correct because an increase in cortisol levels is a symptom of the shock phase of the alarm reaction stage of General Adaptation Syndrome. Option A is incorrect because cortisol levels only increase at the end of the countershock phase of alarm reaction (or perhaps at the start of the resistance stage). Option B is incorrect because dopamine release is not relevant to General Adaptation Syndrome. Option C is incorrect because adrenaline levels increase with the onset of countershock and are not affected during shock.

Question 4

Answer: A

Explanatory notes

Options B and C are incorrect because the car is external to Jenny. Option D is incorrect because the car is present for a short period of time and thus is an acute stressor. Option C is also incorrect for this reason.

Question 5

Answer: C

Explanatory notes

Road incidents like these are a real potential danger to Jenny, so her response is proportionate to the situation, and rational. Option A is incorrect because it implies she is fearful of cars themselves – this could be phobic. Option B is incorrect because it is a valid statement that would be consistent with a specific phobia. Option D is incorrect because the question stem clearly states that Jenny is 'worried'.

Question 6**Answer: A****Explanatory notes**

Option B incorrectly connects the somatic nervous system with the gut–brain axis, which is part of the enteric nervous system. Option C is incorrect because the enteric nervous system is a subdivision of the autonomic nervous system. Option D is incorrect because emerging research shows the gut–brain axis can impact psychological decision-making.

Question 7**Answer: B****Explanatory notes**

Option A is incorrect because increased adrenaline release increases heart rate. Option C is incorrect because sweating increases with stress, and option D is incorrect because the symptoms listed do not correspond with the exhaustion stage of General Adaptation Syndrome.

**Tip**

- Remember that alarm reaction, resistance and exhaustion are the three **stages** of General Adaptation Syndrome. In response to a question about naming a stage, writing only 'shock' or 'countershock' would not earn a mark. Shock and countershock are **phases** of the alarm reaction stage.

Question 8**Answer: B****Explanatory notes**

Option A is incorrect because the 'freeze' response is triggered by coactivation of the sympathetic and parasympathetic nervous systems, and Jared did not freeze. Option C is incorrect because the flight response is regulated by the sympathetic nervous system. Option D is incorrect because Jared did not freeze (although it is correct that the freeze response is triggered by codominance of the sympathetic and parasympathetic systems).

**Tip**

- When responding to questions with several components in the answer, evaluate each component individually and for relevance to the scenario. Parts of each answer may sometimes be correct or psychologically valid, but not for the scenario described. Look for pieces that contradict other parts of the answer or that are not appropriate to the scenario.

Question 9**Answer: B****Explanatory notes**

Option A is incorrect because the process of learning new material is related to long-term potentiation (option B). Options C and D are incorrect because new explicit semantic memories are encoded by the hippocampus, not the amygdala.

Question 10**Answer: C****Explanatory notes**

Option A is incorrect because classical conditioning principles do not apply to Jai's voluntary behaviour of reading. Option B is incorrect because the ice cream represents a consequence, not an antecedent. Option D is incorrect because negative reinforcement involves the removal of an unpleasant stimulus, not the addition of a pleasant one.

**Tip**

- *Always analyse scenarios to decide if classical or operant conditioning principles apply. To differentiate between the two principles, consider whether the response is involuntary (classical) or voluntary (operant), or whether the stimulus that influences behaviour comes before the response (classical) or after the response (operant).*

Question 11**Answer: C****Explanatory notes**

Options A and D describe two different types of memory that are related, but do not require a multimodal system. Option B describes only a single mode of learning (that might fit within a multimodal system), whereas option C demonstrates several interconnected pieces of information that fit together as a system.

Question 12**Answer: B****Explanatory notes**

Option B is correct because this is explicit memory of facts or knowledge (semantics). Options A and D are incorrect because the cab driver's memory of the names does not relate to his personal experiences. Option C is incorrect because the classical conditioning type of implicit memory is a motor or emotional response.

**Tip**

- *Read the stem of the question carefully, looking for a hint about which answer is needed. For example, the question about the cab driver's ability to 'name' the streets indicates that this memory relates to facts and is thus semantic.*

Question 13**Answer: D****Explanatory notes**

The hippocampus is involved in the encoding of the episodic type of explicit memory and autobiographical memories, such as this one for Yen. The amygdala encodes the emotional component of explicit memories. Option A is incorrect because the neocortex is a site of storage. Options B and C are incorrect because the cerebellum, in conjunction with the basal ganglia, stores the procedural type of implicit memories.

Question 14**Answer: B****Explanatory notes**

The distraction of Yen's story likely overwhelms the capacity of Lilly's short-term memory, displacing the street names. Option A is incorrect because, although the duration of short-term memories is about 30 seconds, Lilly's repeating of the street names should have helped keep them in memory. Option C is incorrect because the disruption from short-term memory means the names would never have been encoded to long-term memory. Option D is incorrect because the names would have to enter her short-term memory to enable them to be rehearsed.

Question 15**Answer: C****Explanatory notes**

Although all stages of observational learning will be present, reproducing the marching performance requires physical and mental skills. Options A, B and D are incorrect because simply focusing on the marching behaviour (option A), forming the mental representation of it (option D) and wanting to reproduce it (option B) do not enable the performance of the marching.

Question 16***Answer: A*****Explanatory notes**

Option A is correct because infants are expected to have a higher proportion of REM sleep compared to adolescents and adults due to infants' needs for brain growth and development. Option B shows these states the wrong way around. Option C is incorrect because it leaves out other stages; the totals of X and Y would have to be less than 100% for this to be correct. Option D does not directly pertain to sleep (even though babies are expected to wake up more frequently than adults).

Question 17***Answer: D*****Explanatory notes**

The data presented is quantitative, so options A and C are incorrect. Option B is incorrect because video-monitoring data, although it can be quantified, is not sufficient on its own to determine details of sleep such as REM and NREM periods.

Question 18***Answer: D*****Explanatory notes**

Option A is incorrect because infants have a lower proportion but higher total time of NREM sleep than adults. Option B is incorrect because infants generally have deeper sleep periods than adults. Option C is incorrect because infant melatonin release is generally less cyclical than that of adults.

Question 19***Answer: A*****Explanatory notes**

Option B is incorrect because melatonin release varies between individuals and does not explain general patterns of sleep. Option C is incorrect because there is no obvious difference in sensitivity to blue light between adults and adolescents. Option D is incorrect because adults need a similar proportion of REM sleep to adolescents (although a lower amount by total time).

Question 20**Answer: B****Explanatory notes**

Option A is partially correct but less accurate than option B. Option B is more technically correct because the electrical activity of these muscles is what is directly measured; from this we can impute eye movement. Option C is incorrect because it approximately describes the function of an electromyograph. Option D describes (in part) the function of an electroencephalograph.

**Tip**

- *Pay close attention to the multiple-choice options. Sometimes more than one answer will appear to be correct or partially correct. Use your understanding of core principles to determine the 'most correct' answer.*

Question 21**Answer: A****Explanatory notes**

Options B and D are incorrect because the sleep–wake cycle is a circadian rhythm and a zeitgeber is a cue for circadian rhythms, not an example of an ultradian or circadian rhythm. Option C is incorrect because the items in the pair are the wrong way around.

Question 22**Answer: B****Explanatory notes**

Option A is incorrect because it suggests an improvement in concentration (which is also a cognitive effect). Options C and D are incorrect because increased irritability is an affective effect.

Question 23**Answer: D****Explanatory notes**

Options A and C are reversed readings of the graph; the question notes that higher scores are linked with greater impairment. Option B shows the correct direction of the graph, but misidentifies the sleep deprivation condition as being partial sleep deprivation, when the study used total sleep deprivation.

**Tip**

- *A common error with blood alcohol concentration and sleep deprivation is to say that a person with 24 hours of sleep deprivation 'has' a blood alcohol concentration of 0.10. This is incorrect because being sleep-deprived does not make a person intoxicated. Notice the phrasing in these multiple-choice options: 'the impact of ... is greater than the effect of ...'. Aim to use this type of language when comparing the two measures.*

Question 24**Answer: C****Explanatory notes**

Option A is incorrect because it refers to control rather than experimental conditions. Options B and D incorrectly suggest that the negative effects are distinctly different for the two conditions, whereas option C correctly notes that the conditions have the same types of effect (although the participants with full sleep deprivation are likely to have these effects to a greater degree).

Question 25**Answer: C****Explanatory notes**

Options A and D are incorrect because this is a controlled study with active manipulation of variables. Option B is incorrect because the information clearly states participants took part in all three conditions, which is reflective of a within-subjects design.

**Tip**

- *Carefully study the different key terms for scientific investigation methodologies in the Psychology study design. You will be expected to recognise or supply these key terms in the exam, where appropriate.*

Question 26**Answer: B****Explanatory notes**

Option A is likely to cause delayed sleep-phase syndrome, as opposed to an advanced sleep-phase disorder. Option C describes a treatment for sleep disorders, not a cause of them. Shift work (option D), although impacting sleep times and circadian rhythms, would have different impacts in different contexts.

Question 27**Answer: A****Explanatory notes**

Option B because the items in the pair are the wrong way around. Option C is incorrect because adrenaline is not relevant in this process and is not released by the pineal gland. Option D incorrectly indicates melatonin is inhibited in low light levels.

Question 28

Answer: A

Explanatory notes

Options B, C and D all include one or more examples of low levels of functioning, limited resilience, or poor social and emotional wellbeing.

Question 29

Answer: D

Explanatory notes

Option A includes two valid internal factors and option B includes two valid external factors. In option C the items in the pair are the wrong way around (Eurovision is not a likely stressor for most people).

Question 30

Answer: B

Explanatory notes

Options A, C and D are dimensions of social and emotional wellbeing for Aboriginal and Torres Strait Islander Peoples. Option B is a cultural determinant that acts as a protective factor.

Question 31

Answer: A

Explanatory notes

Option B excludes holistic components of physical and mental health. Option C does not consider the multidimensionality of Aboriginal and Torres Strait Islander Peoples' connection through community, Country and family. Option D focuses on external factors beyond the social and emotional wellbeing framework that can impact wellbeing.

Question 32

Answer: D

Explanatory notes

Option A is a social strategy, and options B and C are biological strategies for maintaining wellbeing. Mindfulness meditation (option D) is a psychological strategy.

Question 33***Answer: A*****Explanatory notes**

Option B is incorrect: nutrition can influence affective, behavioural and cognitive processes, but the statement is written in the opposite direction to the question. Option C is perhaps a valid general statement, but it does not link to a 'mechanism'. Option D is incorrect because a balanced diet does not negate the need for or psychological benefits of sleep.

Question 34***Answer: C*****Explanatory notes**

Option A describes a common misperception of memory bias as a 'deliberate act'. Option B is incorrect because it describes a coping strategy (misremembering) that is not context-specific. Option D is incorrect because, although the interaction in class may have been a specific environmental trigger, this does not explain the differing recollections of the two individuals.

Question 35***Answer: D*****Explanatory notes**

Option D is the most correct answer because it describes an individual's tendency to assume the worst possible outcome in the future. Options A, B and C all refer to other factors that can influence specific phobias, but they do not relate to this particular aspect of distorted cognition. Option A is specifically incorrect because it relates to misperception in past focus (i.e. misremembering information) as opposed to a misperception of what may happen in the future.

Question 36***Answer: B*****Explanatory notes**

Option B is correct because, functionally, this avoidance strategy is 'perpetuation by operant conditioning'. Options A and C are incorrect because this strategy can only be described as an avoidance strategy (Mads is not dealing directly with the stressor), and it will not permanently reduce anxiety or unrealistic thinking about class. Option D is incorrect because it does not show high coping flexibility and will not reduce ongoing anxiety.

Question 37

Answer: A

Explanatory notes

Option B is incorrect because the two sets of data do not impact the type of study, and the Perceived Stress Scale is not a dependent variable. Option C is incorrect because although participants have been measured under different conditions, a range of different methodologies include this. Option D is incorrect because this wording applies to the explanation of a case study, not a correlational study.

Question 38

Answer: C

Explanatory notes

Options B and D are incorrect because the use of calibrated testing apparatus suggests the data should have high accuracy. Option A is incorrect because the data values vary widely among participants, which indicates low precision.

Question 39

Answer: A

Explanatory notes

Option B is incorrect because the external validity of Dr Henderson's study is low due to a small, non-random (convenience) sample, which would not represent all individuals. Option C is incorrect because repeatable and reproducible results do not reflect low validity. Option D is incorrect because a measured correlation between stress and cortisol reflects high validity.

Question 40

Answer: B

Explanatory notes

Option A is incorrect because there is no evidence of informed consent (participants have been recommended by their scholarship provider). Option C is incorrect because justice is through the reporting of any relevant competing claims/undesired results rather than the results of both conditions. Option D is incorrect because, although the study is non-maleficent, there is no indication that the results are being used to better support and help the participants.

SECTION B

Question 1

Sample response

Sleep stage	Measure	
	Electroencephalograph	Video monitoring
REM	high-frequency, low-amplitude waves	eyes may flutter, but subject otherwise still
NREM stage 3	low-frequency, high-amplitude waves	very little movement in most circumstances

Mark allocation: 4 marks

- 1 mark for each of the above points, to a maximum of 4 marks

Question 2a.

Sample response

Anxiety can be an adaptive response, such as Clara being worried about where her mother is so that she feels safe. A specific phobia is an anxiety disorder where the level of fear is excessive and disproportionate to the actual danger posed (in this scenario the flowers pose no danger).

Mark allocation: 2 marks

- 1 mark for identifying an appropriate feature of anxiety and a distinguishing feature of phobia
Other possible responses include:
 - display of avoidance behaviours for phobia (running away), which may not be shown for anxiety
 - a specific stimulus for fear (flowers in Clara's case), whereas anxiety may be more general in nature
- 1 mark for linking each accurate feature to Clara

Note: Deduct 1 mark if a clear distinction is not made between anxiety and phobia (i.e. if the features identified are similarities between the concepts).

Note: A linking word such as 'whereas' must be included to obtain the mark for a distinguishing feature.

Question 2b.**Sample response**

Before conditioning: The unconditioned stimulus (UCS) was the water spraying in Clara's face, which led to an unconditioned response (UCR) of fear of the water spraying, while the neutral stimulus (NS) was flowers, which produced no relevant response

During conditioning: The NS of flowers was repeatedly presented immediately before the UCS of being sprayed in the face, which produced the UCR of fear of being sprayed, leading to an association between the NS and UCS

After conditioning: The NS of flowers became a conditioned stimulus (CS), leading to the conditioned response (CR) of fear of the flowers alone/without the UCS

Mark allocation: 4 marks

- 1 mark for correctly identifying the UCS and UCR
- 1 mark for correctly identifying the NS and indicating the NS presented before the UCS
- 1 mark for correctly identifying the CS and CR
- 1 mark for correctly indicating the CS alone or without the UCS triggers the CR

**Tip**

- *To earn full marks, include as much detail and precision as possible in the classical conditioning acquisition process. The order of the NS and UCS matters, as does your phrasing of the UCR and CR.*

Question 2c.**Sample response**

GABA is a neurotransmitter that has an inhibitory role in the central nervous system, such as reducing anxiety levels. A GABA dysfunction (low level of GABA) predisposes an individual to a specific phobia, because they become anxious more easily if a particular circumstance occurs. GABA's role can be mimicked or facilitated using short-acting GABA agonists known as benzodiazepines, which enable the brain to process GABA more efficiently. However, this only reduces the physiological symptoms of anxiety; this does not treat the causes of the phobia.

Mark allocation: 6 marks

- 1 mark for identifying GABA as the relevant neurotransmitter
- 1 mark for outlining GABA's role as an inhibitory neurotransmitter that can reduce anxiety levels
- 1 mark for describing the effect of a GABA dysfunction as increasing susceptibility to developing a phobia
- 1 mark for identifying benzodiazepines as an intervention
- 1 mark for describing the role of benzodiazepines as mimicking or facilitating the inhibitory effect of GABA
- 1 mark for evaluating that benzodiazepines only have a short-term impact on symptoms rather than eliminating a phobia

**Tip**

- *'Discuss' indicates you should give a considered and balanced response to the information. In this case, you need to provide the specific key terms that are relevant before going into more detail about the role of GABA in the body and benzodiazepines as an intervention. 'Discuss' also implies you must give reasons for your response. When asked to analyse 'how', you must link your answer specifically to the study or details of the relevant concept. This is reinforced in the question, which specifically asks you to link to Clara's phobia.*

Question 2d.**Sample response**

Systematic desensitisation involves a psychologist teaching relaxation techniques such as breathing retraining, followed by the creation of a fear hierarchy of least to most fear inducing. After this is gradual work from the lowest level of the hierarchy to the highest while practising the relaxation techniques (only moving to the next level of hierarchy when specific stimulus does not lead to the fear response).

Mark allocation: 3 marks

- 1 mark for outlining the teaching of relaxation techniques
- 1 mark for outlining the creation of a fear hierarchy
- 1 mark for outlining the graduated exposure from lowest to highest while using the relaxation techniques

Note: In a question worth 4 marks, the detail in brackets in the sample response may be required for a separate mark.

**Tip**

- *Use the command term and phrasing of the question to guide your response. This question says to 'describe' the process, so you do not need to go into detail about the specifics of the fear hierarchy for Clara. If the command term is 'explain', then you need to be more specific.*

Question 3a.**Sample response**

Group 1: acrostic

Group 2: acronym

Mark allocation: 2 marks

- 1 mark for each correctly identified mnemonic

Note: No marks should be given if each mnemonic is not identified by its relevant group number.

**Tip**

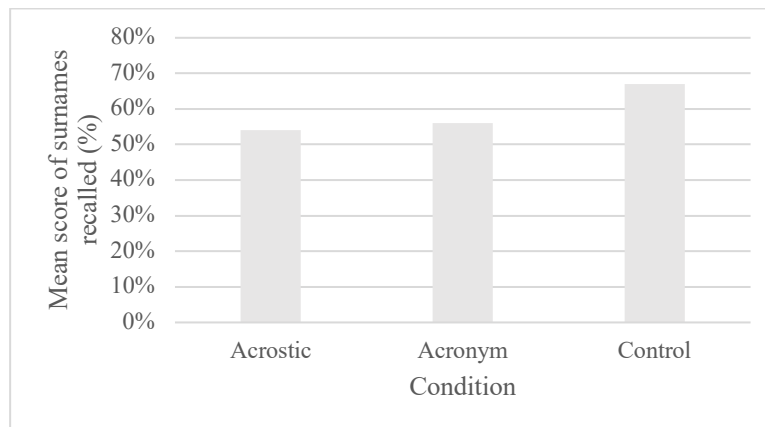
- *For questions like this one, clearly label which key term is linked to which aspect of the scenario (e.g. a link to a person, or to a stage in a theoretical model).*

Question 3b.**Sample response**

Group 3 is a control group to compare the results of the two different mnemonics OR Group 3 is a baseline against which the results of groups 1 and 2 can be compared.

Mark allocation: 1 mark

- 1 mark for a correct statement

Question 3c.**Sample response**

Mark allocation: 3 marks

- 1 mark for a bar graph with appropriately drawn bars
- 1 mark for correct x-axis labels with written indication of groups (not '1, 2, 3')
- 1 mark for a correctly scaled and labelled y-axis

Question 3d.**Sample response**

Ahmed's hypothesis is not supported by his data, because his control group (Group 3) had a higher mean recall score of the surnames than the groups for either of the experimental conditions (acrostic [Group 1] and acronym [Group 2]).

Mark allocation: 2 marks

- 1 mark for correctly assessing that Ahmed's hypothesis is not supported
- 1 mark for outlining that results are contrary to expectations, with the control group scoring higher

Note: The first mark should not be given if a student has written 'disproven'.

Question 3e.i.**Sample response**

The confounding variable of individual participant differences is present because the control group (Group 3) were all players at Rowville Tigers. This reduces reproducibility because testing under different conditions with a different sample would likely give different results. It also reduces the internal validity of the results, due to the greater likelihood that participants in Group 3 would already know player names compared to participants in groups 1 and 2.

Mark allocation: 4 marks

- 1 mark for correctly identifying the appropriate confounding variable
- 1 mark for outlining low/reduced reproducibility
- 1 mark for outlining reduced internal validity
- 1 mark for specifically explaining how reproducibility and validity are impacted in the context of the study

**Tip**

- *Make sure you understand the differences between certain key terms. For example, repeatability refers to conducting the same study under the same conditions. If repeated in the same way, Ahmed's study may well get similar results. However, this question asks about reproducibility, which is where the study is replicated with changes to the conditions, sample, method of measurement, etc. Changing these would change the impact of the confounding variable, hence reducing reproducibility.*

Question 3e.ii.**Sample response**

Ahmed could adjust his methodology to use a within-subjects design to reduce individual participant differences.

Mark allocation: 1 mark

- 1 mark for suggesting a within-subjects design or a sampling/allocation method that could reduce participant differences

Question 3f.**Sample response**

Acrostics and acronyms both require an understanding of the written spelling of a word. Without a visual cue of the first letter, the capacity of a participant's short-term memory is more likely to be exceeded while processing the word itself and processing the likely first letter.

Mark allocation: 2 marks

- 1 mark for identifying that acronyms and acrostics link to the spelling of a word
- 1 mark for providing a reason why this may make it harder to encode or retrieve information

Note: When providing a reason, students may also refer to greater difficulty encoding the information of the first letter into long-term memory because it is not provided, or discuss that reading a list may constantly displace information from short-term memory before it can be encoded, or outline increased likelihood of retrieval failure from long-term memory.

Question 4a.**Sample response**

The method of loci requires an individual to visualise items at a series of locations on a well-known journey or in a familiar location. An individual with aphantasia has difficulty forming a mental image of their world and objects within it. As such, they would be unable to use this method to effectively encode or retrieve the items because they cannot 'see' where objects are meant to be 'located'.

Mark allocation: 3 marks

- 1 mark for outlining how the method of loci works
- 1 mark for defining aphantasia
- 1 mark for connecting an understanding of aphantasia to the method of loci with reference to difficulty with encoding or retrieval

Question 4b.**Sample response**

Songlines are different from the method of loci in that they are multimodal and items are naturally connected to a location/storyline, including significant cultural knowledge that has been maintained through many generations, whereas method of loci may relate to any items that are not directly/naturally connected to the location.

Mark allocation: 2 marks

- 1 mark for identifying songlines (or sung narrative)
- 1 mark for outlining one difference between songlines and method of loci

Note: Examples of other differences are that songlines involve a physically walked journey rather than just a mental journey or they may involve dancing or song as part of the narrative, whereas method of loci simply connects an item with a 'location'.

Question 5a.**Sample response**

Alison is likely to make a primary appraisal of 'stressful–threat' because she is worrying about what will happen in the future when Yvonne's memory gets worse, whereas Yvonne is likely to make a primary appraisal of 'benign–positive'. Alison is therefore likely to proceed to secondary appraisal, and assess coping resources, whereas Yvonne would not need to engage secondary appraisal because she is experiencing no or minimal stress. Alison is likely to assess herself as having sufficient coping resources because she can work together with her family and kin (mother and aunts) to plan ahead.

Mark allocation: 5 marks

- 1 mark for outlining primary appraisal as 'stressful–threat' for Alison because Alison's worry is future-focused (on what will happen to Yvonne)
- 1 mark for identifying Yvonne's primary appraisal as 'benign–positive' OR 'stressful–challenge' because the diagnosis matters to Yvonne but she is not worrying about it
- 1 mark for identifying secondary appraisal as an assessment of coping resources
- 1 mark for explaining that Alison's appraisal will be that she has sufficient coping resources due to her family and kinship
- 1 mark for stating that Yvonne is unlikely to progress to secondary appraisal (if 'benign–positive') OR that she is likely to assess sufficient coping resources with the support of her family and community (if 'stressful–challenge')

Note: For Yvonne, 'benign–positive' or 'benign–challenge' are appropriate as a primary appraisal because it is unclear if Yvonne experiences stress. It is something that matters to her life (so 'irrelevant' is inappropriate) but does not appear to be causing her any distress (hence 'harm/loss' and 'threat' are inappropriate).

Note: Students' responses for Yvonne for secondary appraisal must be congruent to the outlined primary appraisal.

**Tip**

- *For questions relating to the Lazarus and Folkman model, consider the appraisal from the perspective of the individual – their individual perception is what matters, not anyone else's.*

Question 5b.**Sample response**

Cultural continuity relates to the maintenance of Aboriginal and Torres' Strait Islander cultures over time. Alison is connected to her culture, community and through kinship, and knows that her kin are there for her and that she can carry on her grandmother's cultural knowledge despite Yvonne's Alzheimer's disease.

Mark allocation: 2 marks

- 1 mark for defining/explaining cultural continuity
- 1 mark for explaining how Alison is specifically supported by this cultural continuity through kinship, cultural connections and community

Question 5c.**Sample response**

The doctor should ensure that the nature and purpose of the trial are shared with Yvonne and her family. Yvonne must be told all relevant risks and benefits of being part of the trial. Yvonne and a family member should sign the informed consent form if Yvonne is not fully able to comprehend.

Mark allocation: 3 marks

- 1 mark for 'nature and purpose must be shared and understood'
- 1 mark for 'risks and benefits must be shared and understood' OR 'withdrawal and confidentiality rights must be shared and understood'
- 1 mark for Yvonne and her family/guardian being required to complete the written consent

Note: The requirement for a guardian to sign exists when there is a question about the competence of a person to fully comprehend the nature, purpose, risks and benefits of participation (such as if they are under 18 years of age or experiencing an illness, like Alzheimer's, that could cause cognitive impairment).

**Tip**

- *When writing about informed consent, give as much detail as possible. This is the ethical guideline that usually requires the most specificity to apply.*

Question 5d.**Sample response**

Yvonne's brain will have neurofibrillary tangles within neurons. These tangles disrupt nutrients and lead to cell death (within the hippocampus and neocortex). This reduction in neurons will reduce Yvonne's ability to undertake episodic future thinking using her episodic and semantic memory.

Mark allocation: 2 marks

- 1 mark for correctly naming and outlining neurofibrillary tangles, amyloid plaques or identifying deterioration of neurons in the hippocampus or surrounding neocortex
- 1 mark for outlining that the described damage will reduce neural messaging in these areas or prevent the use of existing episodic and semantic memories to imagine the future

Question 6a.**Sample response**

Harriet is in the exhaustion stage of General Adaptation Syndrome. She experienced the stressor for a prolonged period of time and cannot cope at work anymore. Stress hormones such as cortisol have suppressed or damaged her immune system and are now depleted. The damage to her immune system has exposed her to experiencing significant physiological illness in the form of her heart condition.

Mark allocation: 4 marks

- 1 mark for identifying exhaustion as the relevant stage
- 1 mark for explaining why exhaustion is the relevant stage
- 1 mark for suppression of immune system function from prolonged release of cortisol
- 1 mark for the resultant physiological impact on the body being the development of Harriet's heart condition

Note: No marks should be given if the incorrect stage is named. Explanation marks may be given if the relevant stage is not identified.

Note: Students may also suggest that Harriet's heart condition has occurred because of chronic stress and working at an elevated rate for an extended period of time (due to the action of cortisol).

Question 6b.**Sample response**

The protective factor is support from family (that is authentic and energising).

Mark allocation: 1 mark

- 1 mark for identifying social support from family

Question 6c.**Sample response**

The relevant scientific investigation methodology was fieldwork, and researchers should have ensured voluntary participation was followed by allowing Harriet to make a free choice about taking part in the study or not.

Mark allocation: 2 marks

- 1 mark for stating 'fieldwork' as a key term
- 1 mark for stating 'voluntary participation' as a key term and linking to Harriet's need for free choice

Question 7a.**Sample response**

Jason's behaviour: refusing to set the table/help with dinner.

Consequence: Negative punishment in the form of taking away Jason's access to his phone or to his computer games (i.e. removing a pleasant stimulus), which should make it less likely that Jason refuses to help at dinnertime in future.

Mark allocation: 3 marks

- 1 mark for correctly outlining Jason's behaviour
- 1 mark for providing a valid example of a negative punishment
- 1 mark for outlining the effect on Jason's future behaviour

Note: The behaviour outlined must be that of refusing to (help) because this is what will trigger the negative punishment. Similarly, the effect on future behaviour must be phrased in the appropriate direction for a punishment (e.g. reduces likelihood of future undesirable behaviour).

**Tip**

- *Always outline the effect on future behaviour in the same direction as the reinforcement/punishment model suggests. Punishing is decreasing the likelihood of whatever behaviour has occurred happening again in the future. Reinforcing is increasing the likelihood of a behaviour.*

Question 7b.**Sample response**

Dopamine has a role in coordinating voluntary movement, so it will facilitate smooth hand movements as Jason mixes the cookie dough. Dopamine is also involved in reward-based learning, and it is released when Jason is enjoying himself when cooking in the kitchen. This helps Jason experience pleasure and will increase his motivation to repeat this behaviour.

Mark allocation: 2 marks

- 1 mark for explaining dopamine's role in the coordination of voluntary muscle movements
- 1 mark for explaining how dopamine is involved in reward pleasure
- 1 mark for explaining how dopamine release increases motivation for repeat behaviour

Note: 1 mark for each of the above points, to a maximum of 2 marks.

Question 7c.**Sample response**

The cerebellum is involved in the encoding and storage of the implicit-procedural memory of how Jason's hand moves to mix the cookie dough.

Mark allocation: 2 marks

- 1 mark for indicating the involvement of the cerebellum and/or basal ganglia in encoding and storage
- 1 mark for connecting this involvement to an appropriate example of an implicit-procedural skill Jason learned

Question 7d.**Sample response**

Jason could carefully watch and/or actively focus on the skill being demonstrated by Lachlan or Sarah.

Mark allocation: 1 mark

- 1 mark for describing ‘carefully watch’ or ‘actively focus’ and linking to Lachlan’s and Sarah’s actions

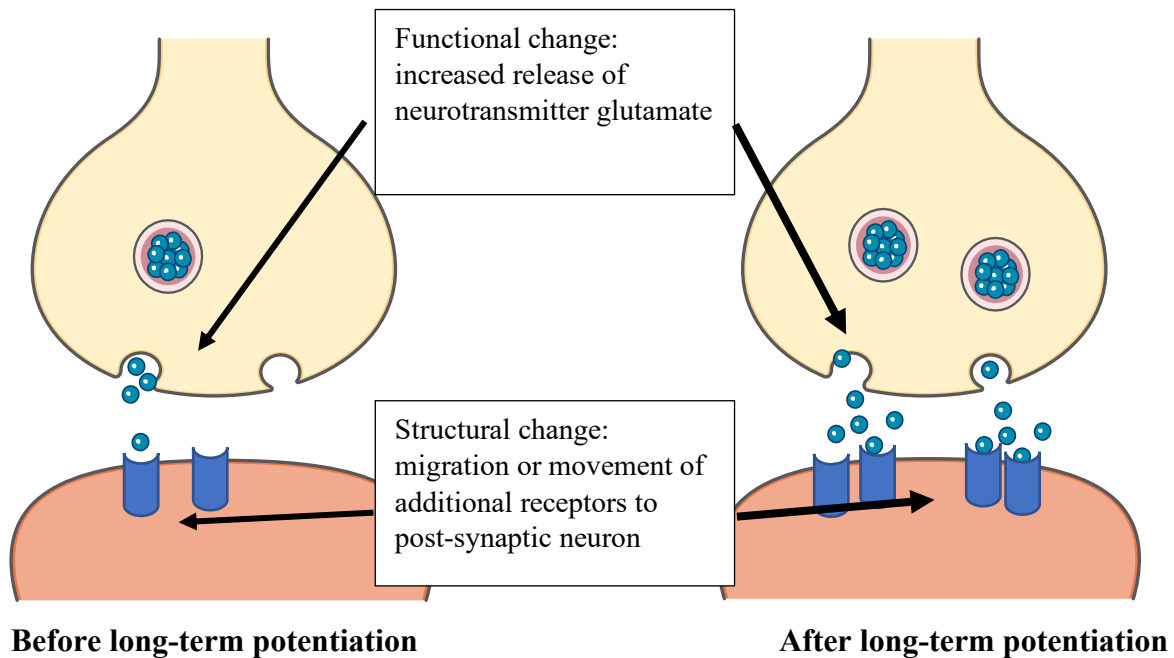
Note: To be given the mark, the answer must mention focusing on Lachlan and/or Sarah as a model.

Question 7e.**Sample response**

The relevant synaptic plasticity process is long-term potentiation.

A structural change is that new filigree appendages/dendritic branches will grow to enable new synapses between neurons to form OR additional receptors will migrate to the post-synaptic neuron to increase the sensitivity of neural transmission.

A functional change will be the increased release of the neurotransmitter glutamate into the synapse, which will increase the likelihood that the post-synaptic neuron will fire.

**Mark allocation: 4 marks**

- 1 mark for identifying long-term potentiation as the synaptic process
- 1 mark for annotating a structural change (migration of receptors is easier to show)
- 1 mark for annotating the functional change with reference to glutamate specifically
- 1 mark for appropriate visual depiction of these changes on the diagram

Note: For the structural change, students may also simply state that there are more receptors on the post-synaptic neuron after long-term potentiation, or show growth of new filigree appendages/dendritic branches.

**Tip**

- Respond to the demands of each different command term in a question. 'Annotate' indicates you need to draw/link information to a supplied diagram. 'Identify' requires you to provide a key term (such as 'long-term potentiation') and 'explain' refers to showing how or why. To obtain full marks for this question, you need to include the purpose of the changes to the neuron.

Question 8

Sample response

During adolescence, individuals experience a sleep–wake shift due to biological changes, where the sleep hormone melatonin starts to be released 1–2 hours later than it was in childhood. As melatonin levels increase, an individual starts to feel tired, so the delayed release of melatonin leads to adolescents not feeling ready to sleep until 1–2 hours later than ‘normal’. The sleep–wake cycle is a circadian rhythm, and adolescents’ need for sleep remains at 8–10 hours (as per Figure 1), so the body will want to wake up 1–2 hours later as well. Individuals may have delayed sleep for a range of social reasons, such as the use of devices that emit blue light (phones or computers for social media or gaming), and the pressure of homework (especially for older teenagers).

According to Figure 1, recent survey data from Victoria and South Australia shows that teenagers are sleep-deprived by 1.5–2 hours per day on school nights, having an average of only 6.5–7.5 hours of sleep. However, the survey data may be subjective and participants may have incorrectly recorded the time spent asleep. Having 6–7 hours of sleep means that they will be deprived primarily of REM sleep because more REM sleep occurs later in the sleep period. Teenagers can be described as having partial sleep deprivation when they have inadequate quantities of sleep, as well as reduced sleep quality due to the stress of school and homework. Teenagers experiencing partial sleep deprivation may experience affective effects, so their emotions and mood are affected. These include increased irritability and snapping at friends, family or teachers; behavioural effects, such as impaired reaction times and coordination (which is why they might fumble with their phone or belongings while packing for school); and cognitive effects, which impact their processing (such as reduced concentration levels and greater distraction from schoolwork).

Many adolescents may meet the diagnostic criteria for delayed sleep-phase syndrome, which is a circadian rhythm phase disorder in which a person’s sleep is delayed by two hours or more beyond a conventional bedtime.

One way to treat delayed sleep-phase disorder is to use bright-light therapy. This therapy uses intense but safe levels of light to act as a zeitgeber (‘time-giver’) to signal the brain. The suprachiasmatic nucleus uses such zeitgebers to determine when to release relevant hormones, and it signals the pineal gland to release melatonin under low light conditions, and to suppress the release of melatonin under high light conditions. Therefore, using bright-light therapy early in the morning for 20–30 minutes will cause the suprachiasmatic nucleus to suppress the release of melatonin in the morning, to help a person to wake. This will bring forward the circadian rhythm so that melatonin is released earlier the following evening, helping to reset an adolescent body clock so that they can sleep earlier.

Additionally, adolescents can use a range of sleep-hygiene strategies to form better sleep habits, including putting phones away one hour before bedtime. The South Australian study shown in Figure 2 (a controlled experiment using a within-subjects design) showed that doing this led to 21 extra minutes of sleep each night. This may be because devices such as phones emit blue light, which suppresses the release of melatonin, so putting phones away can allow melatonin to be released earlier. The apparent use of a within-subjects design (a week of baseline study, followed by a week of no phone use for one hour before bedtime) allowed this study to control for individual participant differences and increases its validity compared to a between-subjects design. Other strategies may include not exercising close to bedtimes (so that core body temperature does not rise too high), keeping the bedroom temperature at about 18°C, eating and drinking early enough (so there is no hunger, but digestive processes have completed before sleep) and avoiding drinks like caffeine, which disrupt sleep.

Mark allocation: 10 marks

Note: The extended-response question is always marked holistically against the following criteria:

- identification and explanation of appropriate psychological terminology in novel and unfamiliar contexts
- analysis and discussion of relevant psychological information, ideas and/or concepts and the connections between them
- analysis and evaluation of data, and/or scientific methodologies and methods, and/or models, and/or theories
- construction of evidence-based arguments and/or drawing of conclusions and/or discussion of implications and findings.

**Tip**

- *Leave enough time (20–25 minutes) to fully answer the extended-response question. If you are running short of time, respond in part to each of the guidance points given – marking is done according to holistic criteria, so you may be marked down if you have only responded to part of the question, even if you have included a high level of detail for that part.*

Mark allocation	Response descriptors
9–10 Very high	• Detailed, insightful explanation of sleep requirements for adolescents along with the biological (with reference to melatonin and suprachiasmatic nucleus) and social causes (environmental influences) of adolescent sleep deprivation • Detailed outline of delayed sleep-phase syndrome (DSPS) in the context of adolescents and biological causes (delayed release of melatonin) • Clear explanation of how bright-light therapy can be applied to improve adolescent sleep–wake patterns, including specific application to DSPS • Clear outline of at least one affective, one behavioural and one cognitive effect of partial sleep deprivation (specifically REM deprivation) that is directly applied to adolescent experiences • Discussion of a variety of possible sleep-hygiene strategies, including exposure to daylight at appropriate times, reducing evening exposure to devices that emit blue light, maintaining body temperature, having eating and drinking patterns that maintain adequate nutrition and hydration, cognitive behavioural strategies • Specific inclusion of data provided from the report to support key points, including basic analysis of the methodology and validity of each study, to the extent possible Note: Very high-level responses should connect several criteria and show an integrated approach, with consistent use of all relevant psychological terminology. The majority of descriptors should be met to achieve a high mark band.

7–8 High	• Detailed explanation of sleep requirements for adolescents, along with the biological cause (with simple reference to melatonin and suprachiasmatic nucleus) and at least one social cause (environmental influences) of adolescent sleep deprivation. • Brief outline of DSPS in the context of adolescents and biological causes (delayed release of melatonin) • Clear explanation of how bright-light therapy can be applied to improve adolescent sleep–wake patterns for DSPS • Outline of affective, behavioural and cognitive effects of partial sleep deprivation – students may not provide all types of effects or may provide all but not apply them specifically to adolescent experiences • Outline of a variety of possible sleep-hygiene strategies including exposure to daylight at appropriate times, reducing evening exposure to devices that emit blue light, maintaining body temperature, having eating and drinking patterns that maintain adequate nutrition and hydration, cognitive behavioural strategies • Data from the report is included in the context to support key points Note: All of the information in these points must be included to a base level to score in the high range. If any descriptor is missing, the response must be placed in the medium mark allocation range or lower overall.
5–6 Medium	• Simple explanation of sleep requirements for adolescents along with a biological cause (melatonin) or one social cause (environmental influences) of adolescent sleep deprivation • Brief outline of DSPS and biological causes (delayed release of melatonin) • Simple explanation of how bright-light therapy can be applied to improve adolescent sleep–wake patterns • Outline of at least one of the affective, behavioural and cognitive effects of partial sleep deprivation – students may not provide all types of effects • Outline of a variety of possible sleep-hygiene strategies including exposure to daylight at appropriate times, reducing evening exposure to devices that emit blue light, maintaining body temperature, having eating and drinking patterns that maintain adequate nutrition and hydration, cognitive behavioural strategies • Data provided from the report may be referred to
3–4 Low	• Simple explanation of sleep requirements for adolescents along with a biological cause (melatonin) or one social cause (environmental influences) of adolescent sleep deprivation • Brief outline of DSPS • Simple explanation of how bright-light therapy works • Outline of at least one of the affective, behavioural and cognitive effects of partial sleep deprivation • Outline of at least one possible sleep-hygiene strategy including exposure to daylight at appropriate times, reducing evening exposure to devices that emit blue light, maintaining body temperature, having eating and drinking patterns that maintain adequate nutrition and hydration, cognitive behavioural strategies • Data from the report may be referred to Note: Responses with mark allocations of 3 or less are likely to be missing or have significant errors in several descriptors.

1–2 Very Low	Responses with a mark allocation of 1–2 will likely mention one or two of the descriptors at the level listed in the 3–4 mark allocation range.
0	No significant response or no valid information is provided.

END OF SAMPLE RESPONSES