Neap

Trial Examination 2022

VCE Psychology Units 3&4

Written Examination

Suggested Solutions

SECTION A – MULTIPLE-CHOICE QUESTIONS

1	A	B	**C**	D
2	A	B	C	**D**
3	A	**B**	C	D
4	A	B	**C**	D
5	A	**B**	C	D
6	**A**	B	C	D
7	A	**B**	C	D
8	A	**B**	C	D
9	A	B	**C**	D
10	A	B	**C**	D
11	**A**	B	C	D
12	A	B	**C**	D
13	**A**	B	C	D
14	A	B	**C**	D
15	**A**	B	C	D
16	**A**	B	C	D
17	A	B	**C**	D
18	A	B	C	**D**
19	**A**	B	C	D
20	A	B	**C**	D
21	A	**B**	C	D
22	A	**B**	C	D
23	A	B	**C**	D
24	A	B	**C**	D
25	A	B	**C**	D
26	**A**	B	C	D
27	A	**B**	C	D
28	A	**B**	C	D
29	A	B	**C**	D
30	A	B	C	**D**
31	A	**B**	C	D
32	A	**B**	C	D
33	A	B	**C**	D
34	A	B	**C**	D
35	A	B	**C**	D
36	A	B	C	**D**
37	**A**	B	C	D
38	A	B	**C**	D
39	A	**B**	C	D
40	A	**B**	C	D
41	A	**B**	C	D
42	**A**	B	C	D
43	A	B	**C**	D
44	A	B	C	**D**
45	A	B	C	**D**
46	**A**	B	C	D
47	A	B	**C**	D
48	A	B	C	**D**
49	A	B	**C**	D
50	A	B	C	**D**

Question 1 C

C is correct. The autonomic nervous system regulates the activities of glands, organs and other bodily processes without conscious effort.

A is incorrect. The autonomic nervous system provides the brain with feedback about internal physiological processes and the brain directs the autonomic nervous system in response to the demands placed on the body. Thus, the two parts of the body are interconnected.

B is incorrect. The somatic nervous system is responsible for regulating skeletal muscle activity.

D is incorrect. The body's circadian rhythm is largely regulated by the suprachiasmatic nucleus, which is part of the central nervous system.

Question 2 D

D is correct. Esther will become consciously aware of her arm coming into contact with the prickly thorns just after the reflexive withdrawal.

A, **B** and **C** are incorrect. A sensory neuron in Esther's arm will convey an afferent signal to the interneurons in her spinal cord, which then integrate the sensory and motor signals and thus causes a motor neuron to convey an efferent signal to the arm, triggering a reflexive preconscious movement.

Question 3 B

B is correct. Parkinson's disease is best described as a nervous system disorder that results from the degeneration of the dopamine-producing neurons in the substantia nigra, which is a key brain structure in regulating the body's motor control.

A is incorrect. Parkinson's disease does not affect the body's defence system (the immune system).

C is incorrect. Parkinson's disease does not primarily affect the skeletal system. The lack of dopamine input to motor structures in the brain affects fine motor control, which relates more to skeletal muscle activity.

D is incorrect. Visceral muscles are regulated by the autonomic nervous system, which is not impacted by Parkinson's disease.

Question 4 C

C is correct. The gradual reduction in myelin levels in the brain's nerve cells would specifically result in the slowing of the transmission of a nerve impulse along the axon of a nerve cell.

A is incorrect. The myelin surrounds the axon, not the cell body.

B is incorrect. The neurotransmitters are stored in the axon terminal buttons, which are located beyond the end of the axon.

D is incorrect. Agonists are drugs or forms of medication that mimic the effect of the neurotransmitters at the receptors located on the dendrites of the postsynaptic cells, which feature no myelin.

Question 5 B

B is correct. The source of Malaika's stress is best identified as a life event as it is a major source of stress that will require her to adapt her lifestyle in order to cope with the stress.

A is incorrect. A catastrophe is an unpredictable event, such as a bushfire, that affects a broad section of the community.

C is incorrect. Acculturative stress is a result of a culture shock that is triggered by a relocation to a new country or experiencing a new culture.

D is incorrect. Eustress is a positive psychological response to a stressor, which is not relevant in this case as Malaika has experienced a negative response.

Question 6 A

A is correct. Cortisol is released into the bloodstream in response to chronic stress to mobilise and energise the body so that it can deal with the stress over a sustained period of time.

B is incorrect. Adrenaline has more of a short-term effect as it is released as part of the fight-flight-freeze response, which is triggered by an immediate threat.

C is incorrect. Endorphins provide a sense of wellbeing but do not mobilise the body or act as a major energy source.

D is incorrect. GABA is a neurotransmitter, not a hormone.

Question 7 B

B is correct. When Malaika had occasional headaches, it was most likely she was experiencing the resistance stage of Selye's General Adaptation Syndrome as she was showing early signs of illness.

A is incorrect. Exhaustion is characterised by more serious forms of illness, such as migraines; occasional headaches are a minor sign of illness.

C and **D** are incorrect. The alarm (shock/counter shock) stages are short-term adaptations that occur before any signs of illness.

Question 8 B

B is correct. This option is an avoidant coping strategy as Malaika is directing her energy away from the source of the stress in order to reduce the emotions triggered by her unemployment.

A, **C** and **D** are incorrect. These options are approach coping strategies as Malaika is directing her energy towards the source of the stress in a form of context-specific effectiveness.

Question 9 C

C is correct. Gamma-amino butyric acid (GABA) reduces the excitability of the cell when it binds with postsynaptic receptors due to its inhibitory effects, whereas glutamate increases the excitability of the postsynaptic cell due to its excitatory effects.

A is incorrect. Both GABA and glutamate are stored in the axon terminals.

B is incorrect. Both GABA and glutamate regulate neuronal excitability in the brain, which is part of the central nervous system.

D is incorrect. While glutamate plays a key role in long-term potentiation, there is no evidence that GABA plays a role in forgetting as it has a variety of functions such as enabling an optimal level of neuronal activity in the brain.

Question 10 C

C is correct. Long-term depression occurs because of a prolonged, low-level or complete lack of stimulation of the presynaptic and postsynaptic neurons that are responsible for the neural trace of a memory. The postsynaptic neuron will become less responsive to any presynaptic activity, thus resulting in a long-lasting weakening of the strength of the synaptic transmission responsible for a memory trace.

A is incorrect. Long-term depression has a long-lasting effect.

B is incorrect. Long-term depression affects long-term memories, not short-term memories.

D is incorrect. Long-term depression can be applied to both explicit and implicit (procedural) memories.

Question 11 A

A is correct. Adrenaline plays a key role in activating the amygdala, which consolidates a highly vivid and emotionally arousing event, otherwise known as a flashbulb memory.

B is incorrect. The hypothalamus plays a key role in gland activity, generating a stress response and regulating the body's circadian rhythm.

C and **D** are incorrect. The cerebellum and basal ganglia are key motor centres of the brain and thus not involved in the consolidation of emotionally arousing events.

Question 12 C

C is correct. Ivan would be most passive in the learning process for option 3. This option involves classical conditioning in which Ivan would develop a reflexive association between the various unhealthy foods that have been laced with an aversive substance and a feeling of nausea. Thus, option 3 is a less cognitive process because the conditioned response is triggered involuntarily by the presentation of the food after conditioning.

A is incorrect. Option 1 involves observational learning, which is a highly cognitive learning process because Ivan would need to carefully note the behaviour of Misha and Si-Woo as well as the associated consequence of their behaviour to determine if the outcome would be desirable for him.

B and **D** are incorrect. Option 2 involves operant conditioning, in which the learner must consciously and voluntarily respond to the antecedent of feeling hunger by eating fruit and vegetables in order to gain a reward (the consequence).

Question 13 A

A is correct. According to Bandura's studies on observational learning, observers are more likely to pay attention to models who share similar characteristics such as gender or age. In this case, Ivan is less likely to actively observe Misha and Si-Woo's behaviour due to the age difference.

B is incorrect. Retention relates to Ivan's ability to make a mental representation of the eating behaviour.

C is incorrect. Reproduction relates to Ivan's ability to replicate the adult dietary behaviour.

D is incorrect. Motivation relates to Ivan's desire to replicate the adult's behaviour when given the opportunity, rather than his failure to observe their actions.

Question 14 C

C is correct. If option 2 is chosen, Ivan feeling hungry and venturing into the kitchen is the discriminative stimulus as this action triggers the voluntary behaviour of eating fruits and vegetables.

B is incorrect. This option describes the behaviour that results in the reinforcer.

A is incorrect. This option describes the consequence, which is a positive reinforcer in this case.

D is incorrect. This option describes the activity that precedes a discriminative stimulus, which will only apply when Ivan is hungry and thus triggers his behaviour in terms of his food choices.

Question 15 A

A is correct. Option 3 uses the principles of classical conditioning to create a reflexive avoidance (conditioned response) of unhealthy foods (conditioned stimulus), which could potentially be generalised to other foods.

B is incorrect. Discrimination would apply if Ivan only avoided the unhealthy foods that were laced with the nausea-inducing substance.

C and **D** are incorrect. The association between the unhealthy food and feelings of illness was not operantly conditioned as the response was not conscious and voluntary behaviour.

Question 16 A

A is correct. The consequences applied to the models (Misha and Si-Woo) in option 1 and Ivan in option 2 would determine the likelihood that the healthy eating behaviour would be repeated/mimicked by Ivan in the future.

B, **C** and **D** are incorrect. Option 3 relies on the principles of classical conditioning, which creates an involuntary association between the stimuli of the unhealthy food and nausea.

Question 17 C

C is correct. During the baseline testing, prior to the conditioning, fire was a neutral stimulus as it did not trigger a fear response from Albert.

A and **B** are incorrect. An unconditioned or conditioned stimulus would trigger either a natural or learned response from Albert, not a neutral response.

D is incorrect. Stimulus generalisation cannot be applied to a stimulus prior to the conditioning process.

Question 18 D

D is correct. Class A had to reconstruct the memory of the order the words were presented in.

A is incorrect. Recognition involves selecting previously learned material from a list of alternatives, including distractors. As the participants were initially shown all of the words, this method of retrieval is not relevant.

B is incorrect. The participants were only exposed to the words on one occasion; thus, they had no opportunity to relearn the words.

C is correct. Recall involves retrieving material without cues. As the participants were provided with the word cards, they had ample cues to retrieve the words.

Question 19 A

A is correct. Class B was permitted to retrieve the words in any order, without the use of cues.

B is incorrect. Serial recall requires the participants to recall the words in the same order in which they were presented; no such instruction was given to class B.

C is incorrect. There were no alternatives provided at the time of retrieval.

D is incorrect. Class B did not have to reconstruct the order that words were presented via the cards, which were not available at the time of retrieval.

Question 20 C

C is correct. The effect of using five-second intervals between the words for Class A would allow additional repetition of the words in short-term memory via maintenance rehearsal, due to the longer intervals before the next word.

A and **B** are incorrect. The longer intervals and additional rehearsal would be more likely to enhance, not reduce, the primacy effect.

D is incorrect. The words would only be registered in sensory memory and, once attended to, they would be processed and rehearsed in short-term memory.

Question 21 B

B is correct. The alphabetical ordering of the words provides a cue of the first letter A, then B and so on, which would assist with the retrieval process.

A is incorrect. The capacity of short-term memory cannot be increased unless chunking techniques are employed, which is not evident in this case.

C is incorrect. The capacity of long-term memory is unlimited; thus, it cannot be increased.

D is incorrect. Leading questions imply information to an individual; however, no questions were asked in this case.

Question 22 B

B is correct. An independent-groups research design was used in this experiment, which ensures that an order effect has been eliminated as a potential extraneous variable, which may have been introduced in a repeated-measures research design.

A is incorrect. The experimenter's actions could have an influence on the results.

C is incorrect. Participant-related variables such as variations in the short-term memory capacities of the participants could affect the results.

D is incorrect. Non-standardised procedures such as variations in the time of the day of testing could affect the results between the two classes.

Question 23 C

C is correct. Alzheimer's disease is a neurodegenerative disease that originates in the hippocampus and thus is generally characterised by anterograde amnesia, which is an impairment in the ability to consolidate new explicit memories.

A and **B** are correct. Loss of smell and difficulty with speech production are symptoms of Parkinson's disease.

D is incorrect. Impaired procedural memory would be unlikely to occur until plaque and tangles spread to the motor areas of the brain, which occurs in later stages of Alzheimer's disease.

Question 24 C

C is correct. Demanet and Vaughan's observation supports the restorative theory of sleep, which describes the essential role of REM sleep in maintaining brain circuitry.

A is incorrect. The evolutionary theory of sleep is aligned with the adaptation of circadian sleep-wake cycles for the survival purposes of different species.

B is incorrect. Sleep-wake patterns refers to the cycle of sleeping and waking, rather than the incidence of REM sleep.

D is incorrect. The brain is highly active during REM sleep.

Question 25 C

C is correct. Ultradian sleep rhythms are recurrent processes that last for 90–100 minutes of NREM–REM sleep and tend to start during stages 1 and 2 of light NREM sleep.

A is incorrect. A hypnagogic state is the transitional period before the onset of sleep and is a circadian process.

B is incorrect. Sleep cycles finish with REM sleep.

D is incorrect. The incidence of deep NREM sleep occurs after the initial stages of light NREM sleep and signifies the start of a sleep cycle.

Question 26 A

A is correct. Pip's temperamental attitude with her staff would be classified as an affective symptom of sleep deprivation as it relates to her emotional functioning.

B is incorrect. Behavioural symptoms refer to observable actions.

C is incorrect. Cognitive symptoms refer to mental processes.

D is incorrect. Physiological symptoms refer to biological changes such as a decrease in body temperature.

Question 27 B

B is correct. Pip was most likely suffering from sleep-onset insomnia, which made it difficult for her to fall asleep at a desirable time. This is classified as a type of dyssomnia that resulted from the circadian phase disorder caused by Pip working the night shift.

A and **C** are incorrect. There is no evidence that Pip was suffering from a parasomnia, which would result in disturbed sleep due to some form of abnormal event such as sleepwalking.

D is incorrect. Pip was not experiencing total sleep deprivation as she was still getting three to four hours of sleep each day.

Question 28 B

B is correct. Cognitive behavioural therapy (CBT) starts with the cognitive aspect of the therapy in which a clinician would aim to help Pip identify her thoughts and feelings about sleep.

A is incorrect. Once the cognitive component is addressed, the behavioural component is implemented.

C and **D** are incorrect. The behavioural component would potentially feature behavioural strategies such as stimulus control and bright light therapies to help Pip reset her body clock to align with the demands of her work schedule.

Question 29 C

C is correct. The most suitable time for Pip to be exposed to a high intensity level of bright light is in the afternoon before her shift. This would signal Pip's suprachiasmatic nucleus (SCN) to suppress melatonin so she can remain alert during her shift, then allow her to switch the timing of her body clock. This would result in a delayed release of melatonin the following morning after her shift so that she can sleep during the day to recover.

A is incorrect. Exposure to the bright light following her shift would suppress melatonin and thus make it more difficult to fall asleep.

D is incorrect. While a mid-shift exposure to a bright light may help Pip remain alert during the shift, it would alter the timing of her circadian sleep-wake cycle. Thus, she would find it more difficult to fall asleep just a few hours following her shift.

B is incorrect. Constant exposure to bright light would create a degree of confusion in Pip's SCN and potentially create havoc with the timing of her circadian sleep-wake cycle.

Question 30 D

D is correct. Pip would be expected to spend 75–80% of her sleep in NREM sleep and the remaining 20–25% in REM sleep.

A, **B** and **C** are incorrect. These options do not give the required percentages.

Question 31 B

B is correct. A stratified sample would create male and female stratas from which the sample size could be determined, ensuring that 70% of the sample participants are male and 30% are female, so that the sample is proportionally representative of the population of interest.

A and **C** are incorrect. A random or convenience sample would not control the proportion of male versus female participants.

D is incorrect. A matched-participants research design is not a sampling method.

Question 32 B

B is correct. A meditative state is achieved by an individual intentionally focusing on a single stimulus, such as their breathing, to enter a state of consciousness that will provide some form of benefit, such as mindfulness or pain reduction. It is a state of consciousness that is distinctly different from a normal waking consciousness in terms of the individual's thoughts, feelings and perceptions.

A is incorrect. This is a normal waking consciousness.

C and **D** are incorrect. These are naturally occurring, not purposely induced, altered states of consciousness.

Question 33 C

C is correct. Secondary data is sourced from a third party and can thus be used for comparative purposes.

A and **B** are incorrect. These options are descriptions of data, not types of data.

D is incorrect. Primary data is original; the results of the experiment described in the question would be primary data.

Question 34 C

C is correct. A table would present the data for all 40 participants in a logical format that would enable viewers of the research investigation report to examine the results for individuals that may vary from the central tendency.

A and **B** are incorrect. These options are summary figures of central tendency that would not be effective in identifying outliers or individual results.

D is incorrect. This is a method of presenting data for groups and hence would not be effective in displaying data for individual participants.

Question 35 C

C is correct. The placebo group would need to be made aware they were being given the placebo drug during the debriefing process. This occurs immediately after the study is complete, allowing the researchers to correct any mistaken beliefs about the study and inform the participants about the purpose of any deception (in this case, the administered placebo drugs) that occurred.

A and **B** are incorrect. Placebos are an ineffective treatment given to a control group of participants so that the researchers have a baseline level of comparison for the effective treatment group. Thus, informing the participants prior to their consent or during the study would not be useful, given that the purpose of the placebos is to eliminate the impact of the expected results of the participants on their behaviour and the subsequent results.

D is incorrect. Publication of the findings may take several months; therefore, it would not be ethically viable to make participants wait until publication to be told whether they were given the placebo drug.

Question 36 D

D is correct. A cross-sectional study is used to provide comparisons between different sections of the community, such as different age groups.

A is incorrect. A cross-sectional study does not attempt to control participant-related variables, such as varying levels of sensitivity to pain.

B is incorrect. Unless the study is double-blinded, the experimenter's actions may have an impact on the results.

C is incorrect. Confounding variables, which are variables other than the independent variable that have a systematic effect on the dependent variable, may be discovered after the completion of the initial study.

Question 37 A

A is correct. Kwasi is ruminating on the accident as he is repeatedly recalling the event and not taking any action to resolve his trauma.

B is incorrect. A stigma is a negative label that may be placed on individuals seeking mental health treatment, which is not applicable in this case.

C is incorrect. Self-efficacy refers to an individual's belief in their ability to carry out a task, which is not evident in this case.

D is incorrect. Catastrophic thinking relates to thought processes about a future event, which is not applicable in this case as the accident has already occurred.

Question 38 C

C is correct. Kwasi's current behaviour demonstrates that he is suffering from a mental illness. This is evident in his social withdrawal and difficulty sleeping, which has occurred over a sustained period as a result of internal factors such as his rumination and external factors such as the accident in which his injury occurred.

A is incorrect. Resilience refers to the ability of an individual to cope and adapt, which is not evident in this case.

B is incorrect. A mental health problem is less severe and shorter in duration than a mental illness. In this case, internal factors such as rumination have affected Kwasi's wellbeing, demonstrating that he is suffering from a mental illness, not a mental health problem.

D is incorrect. A disorganised attachment is a result of inconsistency of the primary caregiver during a child's upbringing, which can result in difficulties forming meaningful relationships.

Question 39 B

B is correct. Poor sleep will affect Kwasi's ability to resolve his anxiety as he will not gain some psychological restorative effects of sleep. An extended period of not receiving these effects could contribute to and extend the duration of his condition.

A and **C** and incorrect. These options are predisposing and pre-existing conditions; perpetuating risk factors are not pre-existing.

D is incorrect. Social support is a protective factor that would reduce Kwasi's cumulative risk and not prolong his condition.

Question 40 B

B is correct. Kwasi's initial evaluation of the significance of his injury was a challenge. His evaluation determined that he would need to direct significant and sustained levels of energy toward the rehabilitation program that was intended to help him overcome the effects of his injury.

A is incorrect. Kwasi was not directing his evaluation of the injury towards the harm done to his body; rather, he was evaluating what he needed to do to recover from the injury.

C is incorrect. Kwasi evaluated his injury as significant because a sustained level of energy would be required to overcome it.

D is incorrect. An evaluation of the resources required to cope with a condition is performed during the secondary appraisal, which occurs after the initial evaluation of the significance of a stress.

Question 41 B

B is correct. Kwasi is experiencing anxiety, which is characterised by a level of tension triggered by an excessive amount of worry about a future event; in this case, the future event is that he will not be able to continue to work in the construction industry.

A and **D** are incorrect. Stress is a state of physiological or psychological tension in response to a current threat and a memory bias occurs when an individual is primarily recalling past negative memories and ignoring positive memories. These are both irrelevant in this case as Kwasi's concern relates to the future.

C is incorrect. A phobia is an intense and irrational fear of a specific stimulus. Kwasi is not experiencing a fear response to a stimulus in this case.

Question 42 A

A is correct. An electroencephalograph (EEG) constructs consciousness by detecting, amplifying and recording the electrical activity of the brain, which represents a physiological response that can be used to determine the frequency of brain wave activity. Thus, it is a quantitative measure of brain activity.

B is incorrect. A psychological indicator such as self-control or level of awareness cannot be quantified.

C and **D** are incorrect. An EEG does not provide qualitative information; this kind of information would be found in detailed written statements.

Question 43 C

C is correct. Using a sleep diary for a sleep research investigation would be best described as a subjective form of data as it is self-reported by an individual. A sleep diary would generate original, primary data that can be controlled by the research body responsible for the investigation.

A and **B** are incorrect. A sleep diary is not objective as the data is not gathered by a third party.

D is incorrect. Secondary data is sourced from a previously completed research study.

Question 44 D

D is correct. Different states of consciousness are assigned to different levels of the continuum of consciousness based on the individual's relative level of awareness. During REM sleep, the individual would have no awareness of external stimuli such as the lighting in their room or sounds from outside their house.

A, **B** and **C** are incorrect. These activities would have a relatively higher level of awareness of external stimuli. For example, a caffeinated, drowsy or daydreaming individual would have a level of awareness of a sudden change in the lighting in their room or be able detect a loud sound such as a dog barking outside of their house.

Question 45 D

D is correct. Kiyoshi's phobia was precipitated through the specific environmental trigger of his traumatic experience at the beach, which has become a conditioned fear response through classical conditioning processes.

A and **C** are incorrect. Kiyoshi's fear response has been implicitly triggered without any conscious association between an antecedent and a consequence as occurs during operant conditioning.

B is incorrect. A cognitive bias may be a perpetuating factor in Kiyoshi's phobia, but a precipitating event is the direct cause of the phobia; the phobia is the result of implicit processes in classical conditioning, rather than a conscious association.

Question 46 A

A is correct. Momoko's phobia was precipitated through positive reinforcement; the desirable consequence of the affection and attention from her father has strengthened her association between the beach and a threat.

B and **D** incorrect. Momoko has not experienced any trauma that has created an implicit level of fear conditioning. Rather, she has experienced social learning by observing the behaviour of her brother in response to the fear stimulus.

C is incorrect. Momoko has not experienced the removal of any aversive fear; instead, she has experienced the addition of affection and attention.

Question 47 C

C is correct. Kiyoshi's phobia has been perpetuated through negative reinforcement as his avoidance of the beach has removed his aversive fear response.

A is incorrect. Kiyoshi has not experienced the addition of a desirable stimulus (as opposed to his sister).

B is incorrect. Kiyoshi's phobia is being maintained through conscious thought processes, rather than the implicit processes that were the precipitating factors in the development of his phobia.

D is incorrect. There is no evidence given that Kiyoshi is experiencing an excessive level of focus on stimuli that poses a mild form of a threat at the exclusion of other stimuli.

Question 48 D

D is correct. Kiyoshi's hyperventilation would most likely result in dizziness due to the imbalance of oxygen and carbon dioxide in his body.

A and **B** are incorrect. Increased breathing results in the intake of excessive amounts of oxygen, which then causes a lack of carbon dioxide in the body; it is this imbalance that causes feelings of lightheadedness and dizziness.

C is incorrect. Kiyoshi's breathing rate would increase, not stop.

Question 49 C

C is correct. Kiyoshi's phobia is persistent as it is triggered each time he is potentially exposed to the sight of the beach near his family's holiday house.

A is incorrect. Kiyoshi's phobia has resulted in maladaptive behaviour, such as his avoidance of the beach.

B is incorrect. Kiyoshi's phobia is irrational as the sight of a beach poses no physical threat.

D is incorrect. Kiyoshi's phobic response is triggered by a specific stimulus.

Question 50 D

D is correct. Friends and family of an individual with a mental health condition can use psychoeducation to address the individual's impaired reasoning, which could be causing anxious thoughts and avoidance behaviours.

A is incorrect. A disorganised attachment is a result of inconsistency in the responsiveness of a caregiver to an infant's needs, which can predispose an individual to a mental health disorder and would be difficult for their supporters to address.

B and **C** are incorrect. These are biological factors that are not under the conscious control of an individual and thus cannot be productively addressed by their supporters.

SECTION B

Question 1 (7 marks)

a. conscious response **OR** voluntary response 1 mark

b. **Sensation of the sting:** The peripheral nervous system will detect the insect sting via sensory receptors in the arm and convey an afferent message to the central nervous system prior to the message being consciously processed. 1 mark

The brain, as part of the central nervous system, then consciously processes the pain from the insect sting. 1 mark

Response to the sting: The central nervous system will initiate a voluntary response via the motor centres in the brain. 1 mark

Efferent signals from the brain will reach the peripheral nervous system, which activates the skeletal muscles in the arm to remove the insect sting. 1 mark

c. The axon in the arm initially conducts an afferent signal from the arm towards the spinal cord. 1 mark

The myelin sheath surrounds the axon and enhances the speed of the transmission of the pain signal along the arm. 1 mark

Question 2 (10 marks)

a. Initially, Vinny formed a primary appraisal of the significance of the news of Anastasia's deportation back to her home country. 1 mark

He evaluated this news as a threat to their relationship and his consequential wellbeing. 1 mark

In his secondary appraisal, Vinny evaluated his coping resources 1 mark
and found that he had the necessary resources to cope with the news of the deportation. This is evidenced by his approach strategy of investigating potential ways in which Anastasia could return to Australia. This resulted in a reappraisal of the significance of the news, which he may have subsequently perceived as less of a threat. 1 mark

b. The initial news of Anastasia's deportation was a life event for Vinny because he had to both cope with and adapt to the news. 1 mark

Vinny was forced to adapt to being separated from Anastasia for several months. To cope with the separation, Vinny and Anastasia could set up regular video calls to maintain a sense of connection to each other. 1 mark

The effects of Anastasia's deportation could also present daily pressures that would require minor adjustments to cope with, 1 mark
such as dealing with possible delays from the Australian immigration department. 1 mark

c. Cortisol is a stress hormone that is released into the bloodstream to help mobilise the body for a sustained stressor. 1 mark

It would provide Vinny with a source of energy by aiding the metabolism of fats, proteins and carbohydrates to help him deal with the stress of Anastasia's deportation. 1 mark

OR

Cortisol diverts energy away from low-priority activities, such as by suppressing the immune response. 1 mark

This energy could be used for Vinny's response to the stress of Anastasia's deportation. 1 mark

Question 3 (6 marks)

For example:

Before conditioning: 1 mark
A sock is a neutral stimulus (NS) and does not trigger an avoidant response. An electrical shock from a training collar could act as an unconditioned stimulus (UCS), which would trigger pain and/or terror, giving an unconditioned response (UCR). 1 mark

During conditioning: 1 mark
Charlie could be repeatedly observed around the house finding a sock and placing it in his mouth (NS). Then, an electric shock could then be triggered (UCS), which would administer pain and cause Charlie to drop the sock from his mouth (UCR). 1 mark

After conditioning: 1 mark
Whenever Charlie sees a sock, which acts as a conditioned stimulus, he reflexively avoids the sock, which is a conditioned response. 1 mark

Question 4 (8 marks)

a. The participants were exposed to misleading information in terms of their past experience with a hot air balloon ride as a child. 1 mark

Thus, this misleading information could have created source confusion as the participants reconstructed the memory 1 mark
in short-term memory during the retrieval process after they were asked if they could recall the memory of the hot air balloon ride. 1 mark

b. *Any two of:*

- The hippocampus: This structure is involved in the retrieval of explicit details of the hot air balloon ride that were stored in the cerebral cortex.
- The cerebral cortex: This structure is where memories from other sources relating to hot air balloons are stored.
- The amygdala: This structure is involved in the retrieval of the emotionality of the hot air balloon ride.

4 marks
1 mark for identifying the correct brain structure (two required).
1 mark for describing each structure.

c. the percentage of participants who reported a false memory of recalling a hot air balloon ride from their childhood 1 mark

Question 5 (10 marks)

a. *For example:*

The researchers could devise a simple short-term memory test to evaluate the participants' cognition, such as asking the participants to read a list of fifteen words presented on a computer screen for twenty seconds. 1 mark

If the participants were not experiencing a cognitive distortion, they should be able to recall between five to nine words, which is the standard capacity for short-term memory. If the participants were experiencing a cognitive distortion, their score would be considerably lower because their diminished cognition would affect the rehearsal and retrieval processes. 1 mark

b. If a participant had consumed a placebo, the electroencephalograph (EEG) would record a relatively high frequency and low amplitude in their brain waves. 1 mark

Comparatively, if a participant consumed benzodiazepine, the EEG would be expected to record a relatively low frequency and high amplitude in their brain waves. 1 mark

Note: Responses may state that the participants will have more beta waves after the placebo treatment and fewer beta waves (or more alpha waves) after benzodiazepine.

c. The ethical principle of informed consent has certain requirements, such as participants being made aware of the nature of the study, the risks involved and their rights prior to consenting to being part of the experiment. 1 mark

The use of placebo treatments could mean that some participants do not fully understand the extent of the risk to their wellbeing, particularly given they are required to cease taking any existing medication. 1 mark

d. According to the ethical principle of beneficence, a research investigation must receive the approval of an ethics committee regarding the potential risks to the participants. 1 mark

Participants being required to cease taking any existing medication for a one-week period poses a risk to their wellbeing. In terms of the findings of the experiment, the benefits would need to outweigh those risks to gain approval from the ethics committee. 1 mark

e. An EEG is an objective method of generating data about the cognition of participants. 1 mark

It accurately measures the brain wave activity of participants completing various cognitive tasks and thus provides a valid measure of cognition. 1 mark

Question 6 (8 marks)

a. Juanita would be expected to have a sleep cycle with a slower wave (focused on stages 3 and 4 of NREM sleep) 1 mark
as this theoretically plays a key role in recovering from endurance-based activities. 1 mark

b. Juanita's circadian phase disorder would have been caused by the mismatch between the natural/adjusted timing of her sleep-wake cycle and her desired sleep-wake cycle. 1 mark

As Juanita's body had been habitually triggering the onset of sleep at 5 am Tokyo time, she would have initially found it difficult to fall asleep seven hours earlier at 10 pm Tokyo time. 1 mark

c. Juanita would have exposed herself to a high-intensity, bright light for a time period of fifteen minutes to two hours each morning after she arrived in Tokyo 1 mark
to help advance her body clock forward by seven hours. 1 mark

The bright, intense light that is detected by the retina is registered by the suprachiasmatic nucleus (SCN), 1 mark
which in turn signals to the pineal gland to suppress melatonin and trigger the release of melatonin at a suitable time in the evening. 1 mark

Note: Responses may also state that the bright, intense light would trigger the release of adrenaline through the adrenal gland and thus help Juanita wake up.

Question 7 (11 marks)

a. **Characteristic:** social wellbeing 1 mark

Explanation: Yijun is showing signs of social wellbeing as he regularly has online interactions with members of his Pilates class. 1 mark

b. Yijun's sleep-onset insomnia is a biological risk factor that is partially offset by the benefits of his regular exercise and good diet. Yijun's ruminations about past experiences without acting to resolve them is a psychological risk factor that will perpetuate his mental condition. Yijun's disorganised attachment is a social risk factor that will predispose his mental condition, which will be partially offset by the social support from his Pilates friends. The combination of the biopsychosocial risk factors will have a cumulative affect and be partially offset by the protective factors that Yijun has employed.

3 marks

1 mark for identifying the biological, psychological and social risk factors from the scenario.
1 mark for explaining how these risk factors will be partially offset by some of the protective factors shown in the scenario.
1 mark for evaluating the cumulative effect of these risk and protective factors.

c. Stigma could act as a barrier preventing Yijun's recovery 1 mark
as he may feel shame in potentially being labelled as suffering from a mental illness. 1 mark

d. **Action stage:** Yijun implemented strategies/healthy behavioural practices such as participating in an exercise class and socialising with people for a period of less than six months. 1 mark

Maintenance stage: Yijun maintained this healthy behaviour of a period of more than six months. 1 mark

e. *For example:*

Exercise would help Yijun divert his attention away from his stressors 1 mark
and assist him in coping and adapting to the stress of dealing with the effects of his social isolation. 1 mark

Question 8 (10 marks)

Effects of a blood-alcohol concentration (BAC) of just under 0.05 compared to effects of similar levels of sleep deprivation on cognition and concentration

Past research by Dawson and Lamond (1999) and Dawson and Reid (2001) found that, in terms of performance on cognition and concentration tests, 17 hours of sleep deprivation has a relatively equivalent effect as a BAC of just under 0.05. In this past research, cognition and concentration tests include grammatical reasoning, sensory comparison, concentration and eye-hand coordination, and visual-motor integration.

The Sommerville University researchers' results reflect a far more significantly affected level of performance for an alcohol-induced state compared to the effects of sleep deprivation. Specifically, the Mathematics test score for 17 hours without sleep (88.5%) on day 2 reflected no impairment as evidenced by the control test score of 89.7% on day 1. In contrast, Mathematics test score for the BAC level of 0.04 (68.9%) on day 3 was more consistent with past results.

Effects of a BAC of 0.10 compared to effects of similar levels of sleep deprivation on cognition and concentration

Past research also found that 24 hours of sleep deprivation has a similar effect as a BAC of 0.10 in terms of the performance on cognition and concentration tests.

The Sommerville University researchers' results reflect a moderate level of impairment at 24 hours of sleep deprivation, as shown by the average Mathematics test score of 72.4% on day 2 compared to the control test score on day 1. However, this impairment is relatively minor when contrasted to the Mathematics test score of 43.2% for the BAC of 0.10 on day 3. Thus, this was not consistent with past results, which reflected a relatively equivalent effect of a BAC of 0.10 and 24 hours of sleep deprivation. This inconsistency may be attributed to the testing procedure. Fifteen minutes may have been too short in duration to validly test concentration, and the exclusive use of Mathematics tests may have been too specific to generate a valid measure of cognition.

Evaluation of the research design

The use of a repeated-measures research design could have created a varied level of expectation in the participants across the three phases of the experiment. For example, participants may have expected themselves to perform significantly better on the control condition (day 1) and the sleep-deprived condition (day 2) due to a placebo effect. This may have led to an unconscious variation in the level of effort that the participants applied to the tests on these days, compared to the diminished performance when the participants completed the alcohol condition. This was discovered after the completion of the tests when the initial analysis of the variation in the results was completed and thus has systematically affected the results.

The Sommerville University researchers could have instead used a matched-participants research design, in which participants could have been matched on the similarity of their results from the previous semester and then placed into three equivalent groups. They would then be randomly allocated into the three conditions, kept apart and not informed of the purpose of the study. This would ideally control the placebo effect by acting as a single-blind procedure.

10 marks

Note: Responses do not need to cite past research to receive full marks.

Marking guide

Very high (9–10 marks)

The student has provided a highly detailed analysis of the results of the study, and includes:

- a detailed, accurate comparison of the effect of both a BAC of just under 0.05 and a BAC of 0.10 and similar levels of sleep deprivation on cognition and concentration
- a detailed, accurate explanation of the confounding effect of a placebo effect and how this could be overcome with an alternative research design.

High (7–8 marks)

The student has provided a detailed analysis of the results of the study, and includes:

- an accurate comparison of the effects of both a BAC of just under 0.05 and a BAC of 0.10 and similar levels of sleep deprivation on cognition and concentration
- an accurate explanation of the confounding effect of a placebo effect and how this could be overcome with an alternative research design.

Medium (5–6 marks)

The student has provided a limited analysis of the results of the study, and includes:

- a basic comparison of the effects of both a BAC of just under 0.05 and a BAC of 0.10 and similar levels of sleep deprivation on cognition and concentration
- a basic explanation of the confounding effect of a placebo effect and how this could be overcome with an alternative research design.

Low (3–4 marks)

The student has provided a limited analysis of the results of the study, and includes:

- a limited comparison of the results, including reasons for the discrepancies with past results.

Very low (0–2 marks)

The student has provided a limited analysis of the results of the study, and includes:

- a limited description of some of the results, including reasons for the discrepancies with past results.