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# Assessment Guide

## Part A: Multiple Choice

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| *The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory* | **Question 1**<br>According to the Atkinson-Shiffrin multi-store model of memory, sensory memory<br>**A.** has an unlimited duration.<br>**B.** is not consciously processed.<br>**C.** has a very limited capacity.<br>**D.** is consciously processed before transfer to other memory systems. | *B* | *Sensory memory is a memory system that we are not consciously aware of. Awareness of sensory memory only occurs once attention has been paid to it and it is transferred into short-term memory. Sensory memory has an unlimited capacity and short duration.* |

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| *Changes in levels of alertness as indicated by brain waves patterns (beta, alpha, theta, delta) due to drug-induced altered states of consciousness (stimulants and depressants)* | **Question 2**<br>One evening Edward completed a challenging crossword, then relaxed by doing a 5-minute meditation. Which of the following options best represents the sequence of brain waves that Edward would have experienced, in the order that he would have experienced them?<br>**A.** delta, theta<br>**B.** theta, alpha<br>**C.** alpha, beta<br>**D.** beta, alpha | *D* | *As crosswords require alertness, they correspond to the presence of beta waves. Meditation involves relaxation and corresponds to the presence of alpha brain waves.* |

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| *The differences in sleep across the lifespan and how these can be explained with reference to the total amount of sleep and changes in a typical pattern of sleep (proportion of REM and NREM).* | **Question 3**<br>Compared to adults, the daily sleeping habits of a newborn baby will show that the baby will<br>**A.** sleep for longer and have a greater proportion of REM.<br>**B.** sleep less consistently but have a similar proportion of REM sleep.<br>**C.** spend less time sleeping and have a similar proportion of REM sleep.<br>**D.** sleep for longer and have a smaller proportion of REM. | *A* | *A newborn baby tends to sleep between 16 and 17 hours a night and around 50% of this time is spent in REM compared to an adult sleeping pattern that typically lasts for 8 hours a night and around 20% REM sleep.* |

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| *The distinction between predisposing risk factors (increase susceptibility), precipitating risk factors (increase susceptibility and contribute to occurrence), perpetuating risk factors (inhibit recovery) and protective factors (prevent occurrence or re-occurrence)* | **Question 4**<br>A family history of anxiety disorders may be a _____ risk factor for developing a specific phobia of dogs, whereas being repeatedly bitten by dogs may be a _____ risk factor for developing a specific phobia of dogs.<br>A. protective; perpetuating<br>B. predisposing; perpetuating<br>C. precipitating; predisposing<br>D. predisposing; precipitating | *D* | *Predisposing risk factors increase vulnerability to developing a mental illness, such as a family history of anxiety disorders making the onset of a specific phobia more likely. Precipitating risk factors act as triggers for developing a mental illness, such as repeated negative experiences with dogs.* |

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| *The distinction between conscious and unconscious responses by the nervous system to sensory stimuli, including the role of the spinal reflex* | **Question 5**<br>The spinal reflex indicates that<br>A. the brain can respond very quickly in situations that require an immediate response to promote survival.<br>B. the 'fight-flight-freeze' response can radically enhance our chance of survival.<br>C. not all behaviour is initiated by the brain.<br>D. not all internal muscles are regulated by the peripheral nervous system. | *C* | *The spinal reflex involves a simple involuntary response that is initiated by the spinal cord. This response is initiated before the signal reaches the brain.* |

*Use the following information to answer Questions 6-8.*

An experiment is conducted by a Principal at a school on the mathematical ability of the VCE students. The Principal selects 100 Year 12 students and 100 Year 11 students from the 400 VCE students at the school as participants for the experiment by drawing their names out of a hat. The Principal then flips a coin to decide whether the participant is allocated to the control or experimental group. After completing this procedure, the control group consists of 25% Year 11 students and 75% Year 12 students while the experimental group consists of 75% Year 11 and 25% Year 12 students. To avoid biasing the results, the Principal had the experiment conducted by an impartial research assistant.

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| *Select appropriate sampling procedures for selection and allocation of participants including random sampling, stratified sampling, convenience sampling and random allocation of participants to groups* | **Question 6**<br>The method of sampling used by the Principal was<br>A. independent groups.<br>B. stratified sampling.<br>C. random sampling.<br>D. matched participants. | *C* | *By drawing the names of participants from a hat the Principal has provided an equal chance for every member of the population (VCE students at the school) to be selected for the experiment.* |

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| *Use an appropriate experimental research design including independent groups, matched participants, repeated measures and cross-sectional studies* | **Question 7**<br>The experimental research design used by the Principal was<br>A. independent groups.<br>B. stratified sampling.<br>C. random sampling.<br>D. matched participants. | *A* | *By flipping a coin all participants were given an equal chance of being in ether the control or experimental groups of the experiment. The participants were not allocated by matched participants as they were simply placed in the groups at random.* |

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| *Evaluate investigative procedures and possible sources of bias, and suggest improvements, with reference to identification of potential extraneous and confounding variables including individual participant differences, non-standardised instructions and procedures, order effects, experimenter effect and placebo effects* | **Question 8**<br>One kind of extraneous variable that this experiment is likely to suffer from is _____ which is best controlled for by _____.<br>**A.** individual participant differences; changing the sampling technique<br>**B.** a biased sample; changing the sampling technique<br>**C.** individual participant differences; changing the experimental research design<br>**D.** a biased sample; changing the experimental research design | *C* | *As there is an uneven proportion people in Year 11 and 12 between the control and experimental groups, it is likely that the individual participant difference of year level may have an unwanted effect on the dependent variable. This is best controlled by using a different experimental research design, such as repeated measures or matched participants.* |

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| *The role of the neuron (dendrites, axon, myelin and axon terminals) as the primary cell involved in the reception and transmission of information across the synapse (excluding details related to signal transduction)* | **Question 9**<br>One role of myelin sheath is to<br>**A.** excite an action potential.<br>**B.** inhibit an action potential.<br>**C.** enhance the speed of signal transmission between neurons.<br>**D.** enhance the speed of signal transmission within a neuron. | *D* | *Myelin sheath enhances the speed of an action potential as it travels down the axon.* |

*Use the following information to answer Questions 10-12.*

Melissa and Naomi are discussing how worried they are about a forthcoming VCE Units 3 and 4 Biology SAC.

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| *Models of stress as a psychological process, with reference to Richard Lazarus and Susan Folkman's Transactional Model of Stress and Coping (stages of primary and secondary appraisal)* | **Question 10**<br>According to Lazarus and Folkman's Transactional Model of Stress and Coping, what is the most likely primary appraisal that the two students have made of the forthcoming Biology SAC?<br>**A.** stressful; threat<br>**B.** stressful; harm/loss<br>**C.** irrelevant<br>**D.** benign-positive | *A* | *The question stem suggests that the students are 'worried' about the forthcoming SAC. This means they must have made a primary appraisal of the SAC as stressful. As the SAC has not yet taken place, they have not yet suffered direct harm or loss because of it, but they are threatened by the potential for future harm, should the results be unpleasing.* |

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| *Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress.* | **Question 11**<br>Melissa decides to spend an extra hour each night studying for the SAC, whereas Naomi finds herself watching TV for longer periods each night leading up to the SAC, and does not adequately prepare for the assessment. In terms of the coping strategies the students have used<br>A. Melissa has used an avoidance strategy whereas Naomi has used an approach strategy.<br>B. Melissa has used an approach strategy whereas Naomi has used an avoidance strategy.<br>C. Melissa has used an avoidance strategy whereas Naomi has used a problem-focused coping strategy.<br>D. Melissa has used a primary coping strategy whereas Naomi has used a secondary coping strategy. | *B* | *By doing additional study Melissa has used an approach strategy that aims to directly deal with the stressor of the SAC. By watching extra TV, Naomi attempts to deal with her anxiety concerning the forthcoming SAC, but avoids dealing with the SAC directly, thus it is an avoidance strategy.* |

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| *Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress.* | **Question 12**<br>After a few days, Melissa realises that one extra hour of study a night will not be sufficient for her to learn all that she needs for the forthcoming SAC. She decides to increase the amount of time she studies to an additional two hours per night. In adjusting the amount of time she spends studying, Melissa demonstrates<br>A. coping fallibility.<br>B. coping rigidity.<br>C. coping contextually.<br>D. coping flexibility. | *D* | *Melissa demonstrates the ability to recognise when a coping strategy is insufficient and then modify her strategy according to the demands of the stressor. By doing this she demonstrates coping flexibility.* |

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| *Models of behaviour change with reference to the transtheoretical model including the stages of pre-contemplation, contemplation, preparation, action and maintenance/relapse.* | **Question 13**<br>Doug suffers from persistent feelings of anxiety that often makes it harder to complete his day-to-day activities. While he has thought about seeking professional help for his anxious behaviour, he has never sought it out and continues to live with chronic feelings of anxiety. According to the transtheoretical model, Doug is currently at the<br>A. action stage.<br>B. preparation stage.<br>C. contemplation stage.<br>D. pre-contemplation stage. | *C* | *Doug has thought about the possibility of changing his behaviour but has not yet started to make the changes.* |

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| *Methods to retrieve information from memory or demonstrate the existence of information in memory, including recall, recognition, relearning and reconstruction* | **Question 14**<br>Amber and Erina are trying to remember the names of their old classmates from Grade 1. Amber attempts to write down a list of all the names of the students in the class off the top of her head, whereas Erina attempts to identify her classmates' names from a list of all the students at primary school that year. With all other factors being equal, who will demonstrate a better memory of the names and why?<br>**A.** Erina will demonstrate a better memory of the names as she utilises a more sensitive method of memory retrieval than Amber<br>**B.** Amber will demonstrate a better memory of the names as she utilises a more sensitive method of memory retrieval than Erina<br>**C.** Both Amber and Erina should demonstrate the same memory of their classmates' names as the information has processed by their amygdalae and hippocampi<br>**D.** Both Amber and Erina should demonstrate the same memory of their classmates' names as declarative memory is less vulnerable to decay | *A* | *Amber uses a recall task to retrieve the memory of her classmates' names, whereas Erina uses a recognition technique. As recognition is a more sensitive method of memory retrieval, Erina is more likely to retrieve more names from her long-term memory.* |

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| *The 'Little Albert' experiment as illustrating how classical conditioning can be used to condition an emotional response, including ethical implications of the experiment.* | **Question 15**<br>One significant ethical issue associated with the 'Little Albert' experiment was that<br>**A.** it is unethical to use babies in experimental research.<br>**B.** Little Albert never underwent a formal procedure to extinguish the conditioned response.<br>**C.** Little Albert was an unfit to participate as Watson noted that prior to the conditioning phase he was easily scared.<br>**D.** Watson was not able to formally report his findings in a Psychological journal. | *B* | *Watson and Reyner never used a procedure to extinguish Little Albert's conditioned response of fear and as such failed to adequately debrief Little Albert, potentially causing lasting psychological trauma.* |

*Use the following information to answer Questions 16-17.*

Aki's doctor suggests that Aki should take up jogging regularly as a means of reducing his stress.

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| *Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress.* | **Question 16**<br>One way that jogging regularly can help reduce Aki's feeling of stress is that<br>**A.** jogging activates Aki's freeze response.<br>**B.** jogging allows Aki the opportunity to ruminate on the stressor.<br>**C.** jogging activates Aki's cerebellum.<br>**D.** jogging can help use up the stress-hormones that were already present in Aki's body. | *D* | *Jogging is a type of physical exercise that helps to use up stress hormones in the body, assisting a reduction in stress.* |

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| *Operant conditioning as a three-phase model (antecedent, behaviour, consequence) involving reinforcers (positive and negative) and punishment (including response cost) that can be used to change voluntary behaviours, including stimulus generalisation, stimulus discrimination and spontaneous recovery (excluding schedules of reinforcement)* | **Question 17**<br>Aki notices that he becomes less stressed the more he jogs. This encourages Aki to jog more regularly. In terms of operant conditioning, what type of consequence is Aki experiencing from jogging?<br>A. positive reinforcement<br>B. negative reinforcement<br>C. response cost<br>D. punishment | *B* | *This is negative reinforcement as the removal of the unpleasant experience of stress strengthens the behaviour of jogging.* |

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| *The characteristics of scientific research methodologies and techniques of primary qualitative and quantitative data collection relevant to the selected investigation: experiments, self-reports, questionnaires, interviews and/ or use of rating scales; reliability and validity of data; and minimisation of experimental bias and confounding and extraneous variables* | **Question 18**<br>Without a control group, psychological research can never<br>A. establish a valid cause and effect relationship between variables.<br>B. establish a reliable trend in data.<br>C. be useful.<br>D. be representative of a population of research interest. | *A* | *A control group is required to establish a valid cause and effect relationship between variables as it allows the impact of the independent variable to be assessed.* |

*Use the following information to answer Questions 19-20.*

Dr Murga learned of a unique patient named David who has had his hippocampi severely damaged by a stroke one month ago. She performed a series of tests on him to determine the effect on his memory.

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| *The effects of brain trauma on areas of the brain associated with memory and neurodegenerative diseases, including brain surgery, anterograde amnesia and Alzheimer's disease* | **Question 19**<br>Which of the following options is the most likely effect of this brain damage on David's memory?<br>A. David can acquire new skills and learn new information but struggles to recall the information he learnt prior to the brain damage<br>B. David has lost his ability to demonstrate procedural memory, but his declarative memory remains largely intact<br>C. David can recall events from early in his life in vivid detail but struggles to recall any details of information he has learned since the brain damage<br>D. Although David cannot recall the half hour prior to the stroke, he suffers no additional memory loss | *C* | *The damage that David has sustained to his hippocampi is likely to result in anterograde amnesia, but not significantly affect the long-term memories he had stored prior to the brain damage.* |

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| *Determine appropriate type of investigation: experiments (including use of control and experimental groups); case studies; observational studies; self-reports; questionnaires; interviews; rating scales; access secondary data, including data sourced through the internet that would otherwise be difficult to source as raw or primary data through fieldwork, a laboratory or a classroom* | **Question 20**<br>Dr Murga finds David to be a fascinating patient, but is aware that she cannot make any generalisations from his responses about the role of the hippocampus for normal, healthy people. This is because a case study<br>A. cannot produce reliable results from an individual.<br>B. cannot be a valid representation of the population.<br>C. cannot yield valid data for the individual.<br>D. is useless from a research perspective. | *B* | *As Dr Murga's tests are focused on the responses of one individual, she does not have a valid representation of a population to generalise the results to; her sample size is too small.* |

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| *Observational learning as a method of social learning, particularly in children, involving attention, retention, reproduction, motivation and reinforcement* | **Question 21**<br>Tiffany has just received her L-plates and has her first driving lesson. She is surprised to realise that without being specifically instructed, she already has an understanding of the way in which the accelerator and brake pedals work. In terms of observational learning, this may be because<br>A. she has been reinforced for correctly identifying the function of the accelerator and brake pedals.<br>B. she is able to display stimulus generalisation between the roles of the accelerator and brake pedals.<br>C. she knows that depressing the accelerator will always yield reinforcement and depressing the break will always yield punishment.<br>D. she has attended to her parents as they drive and retained this information, but not yet had the opportunity to attempt to reproduce the behaviour. | *D* | *In terms of observational learning, Tiffany must have previously attended to a model (such as a parent) demonstrating the appropriate behaviour on the pedals, retained this information, and now she attempts to reproduce it as she has the opportunity and motivation to do so.* |

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| *Organise, present and interpret data using tables, bar charts, line graphs, percentages, calculations of mean as a measure of central tendency and understanding of standard deviation as a measure of variation around the mean* | **Question 22**<br>A researcher analyses the data gathered from the control group of an experiment and finds that the results indicate some outliers who show a far lower response than most of the cohort. One implication of this result is that<br>A. a mean may not be the most accurate measure of central tendency to use for this data set.<br>B. the standard deviation is likely to be narrow.<br>C. the results cannot be valid.<br>D. the graph is bimodal. | *A* | *When a data set displays a skew, the mean is often not the most accurate measure of central tendency and a median may provide a more accurate descriptive statistic to use.* |

*Consciousness as a psychological construct that varies along a continuum, broadly categorised into normal waking consciousness and altered states of consciousness (naturally occurring and induced)*

**Question 23**

Consciousness is a psychological concept that varies along a continuum. This means that

A. changes in consciousness cannot be perceived by the individual who is experiencing them.
B. different states of consciousness are associated with qualitatively different levels of awareness.
C. consciousness can be directly observed and measured by researchers.
D. humans share a universal experience of consciousness.

*B* *The nature of consciousness shifts in relation to the varying levels of awareness a person is experiencing. Higher levels of consciousness are associated with heightened levels of awareness (such as focussed attention) and lower levels of consciousness are associated with lowered awareness (such as a coma).*

*Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning*

*The role of neurotransmitters and neurohormones in the neural basis of memory and learning (including the role of glutamate in synaptic plasticity and the role of adrenaline in the consolidation of emotionally arousing experiences).*

**Question 24**

Which neurotransmitter is most important for long-term potentiation?

A. serotonin
B. GABA
C. glutamate
D. adrenaline

*C* *Glutamate is the primary excitatory neurotransmitter of the brain and plays a fundamental role in strengthening synaptic connections through the process of long-term potentiation.*

*Changes in a person's psychological state due to levels of awareness, controlled and automatic processes, content limitations, perceptual and cognitive distortions, emotional awareness, self-control and time orientation*

**Question 25**

Which of the following statements best describes the relationship between controlled and automatic processes and types of attention?

A. controlled and automatic processes can both be completed using divided attention
B. controlled processes require divided attention whereas automatic processes require focused attention
C. controlled processes require focused attention whereas automatic processes allow divided attention
D. controlled processes and automatic processes both require focused attention

*C* *By definition, controlled processes require focused attention. Automatic processes can be completed using focused or divided attention.*

*Apply ethical principles when undertaking and reporting investigations, including consideration of the role of the experimenter, protection and security of participants' information, confidentiality, voluntary participation, withdrawal rights, informed consent procedures, use of deception in research, debriefing and use of animals in research*

**Question 26**

A Psychology professor requires research participants for an experiment he is conducting and decides to ask his students to be involved. After comprehensively explaining the aims and nature of the experiment to his students, he invites them to participate in the research and tells them that they will receive an additional 10% of their overall score if they participate, and that they will lose 5% of their overall score if they choose not to participate. The students who choose to participate then sign a document indicating their willingness to be a part of the experiment. In this scenario, which ethical principle has the professor violated?

A. withdrawal rights
B. voluntary participation
C. debriefing
D. informed consent

*B* *The professor has coerced students into participating by connecting their participation (and non-participation) to their overall score. Therefore, he is violating the principle of voluntary participation.*

*The effects of partial sleep deprivation (inadequate sleep either in quantity or quality) on a person's affective (amplified emotional responses) behavioural and cognitive functioning*

*The distinction between dysomnias (including narcolepsy and sleep-onset insomnia) and parasomnias (including sleep walking) with reference to the effects on a person's sleep-wake cycle*

**Question 27**

The night before a Chemistry test, Lawrence stays up late to prepare and only gets three hours of sleep. His classmate Eli has nine hours of sleep but suffers from multiple sleep walking episodes each night. In terms of the experiences of the two students

A. Lawrence will have experienced total sleep deprivation while Eli will have experienced partial sleep deprivation.
B. Lawrence is likely to experience negative effects of sleep deprivation the following day but Eli is not likely to experience any effects of sleep deprivation.
C. Lawrence will be unaffected by the effects of sleep deprivation, while Eli is likely to experience some behavioural changes because of his condition.
D. both Lawrence and Eli could possibly experience some difficulties with attention the following day.

*D* *The effects of sleep deprivation are evident through a reduction in the amount of time spent sleeping (as Lawrence has experienced) and/or a reduction in the quality of the sleep (as Eli has experienced due to his sleep walking). Both Lawrence and Eli are likely to experience some negative effects of sleep deprivation, such as difficulties with attention.*

*Use the following information to answer Questions 28-32.*

At Julia's 10th birthday party she was happy to see that her mother had filled the living room with balloons. However, after the party her naughty sister repeatedly held balloons in front of Julia's face and then popped them with a pin. The loud noise frightened Julia and ever since this experience, she has complained of a severe fear of balloons. When Julia is 12, her parents decide to take her to see a psychologist to help treat her fear of balloons.

*Classical conditioning as a three-phase process (before conditioning, during conditioning and after conditioning) that results in the involuntary association between a neutral stimulus and unconditioned stimulus to produce a conditioned response, including stimulus generalisation, stimulus discrimination, extinction and spontaneous recovery*

*The relative influences of contributing factors to the development of specific phobia with reference to: gamma amino butyric acid (gaba) dysfunction, the role of stress response and long-term potentiation (biological); behavioural models involving precipitation by classical conditioning and perpetuation by operant conditioning, cognitive bias including memory bias and catastrophic thinking (psychological); specific environmental triggers and stigma around seeking treatment (social)*

**Question 28**

In terms of classical conditioning, how could Julia's fear of balloons be best described in the 'after conditioning' phase?

A. the unconditioned response
B. the unconditioned stimulus
C. the conditioned response
D. the conditioned stimulus

*C Julia has learnt the fear of balloons through repeated associations of balloons (the originally neutral stimulus) and the startling noise of them popping (the unconditioned stimulus). The balloons have now become a conditioned stimulus and fear of balloons has become the conditioned response.*

*Interactions between specific regions of the brain (cerebral cortex, hippocampus, amygdala and cerebellum) in the storage of long-term memories, including implicit and explicit memories.*

**Question 29**

Which of the following best describes the role that Julia's amygdala played in the formation of her fear of balloons?

A. Julia's amygdala was involved in the consolidation of the implicit emotional content of the memory of her sister repeatedly popping balloons in front of her
B. Julia's amygdala was active in generating a feeling of reward when she had balloons popped in front of her
C. Julia's amygdala stored the procedural memory of how she should react to a balloon
D. Julia's amygdala was entirely responsible for the consolidation of the explicit episodic memory of her sister popping balloons in front of her

*A The amygdala is involved in the consolidation of the implicit emotional content of memory. In this situation, it has assisted the consolidation of her memory of a frightening experience occurring in the presence of balloons.*

*Interactions between specific regions of the brain (cerebral cortex, hippocampus, amygdala and cerebellum) in the storage of long-term memories, including implicit and explicit memories.*

**Question 30**

Which of the following best describes the role that Julia's hippocampus played in the formation of her fear of balloons?

A. Julia's hippocampus was involved in the consolidation of the implicit emotional content of the memory of her sister repeatedly popping balloons in front of her
B. Julia's hippocampus was active in generating a feeling of reward when she had balloons popped in front of her
C. Julia's hippocampus stored the procedural memory of how she should react to a balloon
D. Julia's hippocampus was involved in the consolidation of the explicit episodic memory of her sister popping balloons in front of her

*D* *The hippocampus is involved in the consolidation of explicit, declarative (semantic and episodic) memory. In this scenario, it involves the events of the experience that led to the development of the phobia.*

*The relative influences of contributing factors to the development of specific phobia with reference to: gamma amino butyric acid (GABA) dysfunction, the role of stress response and long-term potentiation (biological); behavioural models involving precipitation by classical conditioning and perpetuation by operant conditioning, cognitive bias including memory bias and catastrophic thinking (psychological); specific environmental triggers and stigma around seeking treatment (social)*

**Question 31**

The psychologist also notes that Julia will avoid any situation that may involve balloons. In terms of operant conditioning, avoiding balloons

A. precipitates her fear of balloons through positive reinforcement.
B. perpetuates her fear of balloons through negative reinforcement.
C. extinguishes her fear of balloons through lack of exposure to the conditioned stimulus.
D. extinguishes her fear of balloons through lack of exposure to the unconditioned stimulus.

*B* *By avoiding balloons, Julia reduces the unpleasant experience of fear and this makes her more likely to avoid balloons again in the future. This is negative reinforcement (removal of an unpleasant stimulus that strengthens a behaviour) and it perpetuates (maintains) her phobia.*

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| *Evidence-based interventions and their use for specific phobia with reference to: the use of short-acting anti-anxiety benzodiazepine agents (gamma amino butyric acid [GABA] antagonists) in the management of phobic anxiety and relaxation techniques including breathing retraining and exercise (biological); the use of cognitive behavioural therapy (CBT) and systematic desensitisation as psychotherapeutic treatments of phobia (psychological); psychoeducation for families/supporters with reference to challenging unrealistic or anxious thoughts and not encouraging avoidance behaviours (social).* | Question 32<br>The psychologist suggests that Julia use systematic desensitisation to help reduce her fear of balloons. During the procedure, the psychologist repeatedly pairs the sight of balloons with a relaxation technique. In terms of the language of classical conditioning, what is the relaxation technique?<br>A. the neutral stimulus<br>B. the conditioned stimulus<br>C. the unconditioned stimulus<br>D. the conditioned response | *C* | *Systematic desensitisation uses the principles of classical conditioning to condition a response of calmness to a previously fear-provoking stimulus. In this situation, the neutral stimulus is the stimuli that creates anxiety, the unconditioned stimulus is a relaxation technique, and the unconditioned response is a feeling of relaxation. After repeated associations of the neutral stimulus and unconditioned stimulus, the conditioned stimulus becomes the stimuli that originally produced anxiety and the conditioned response is a feeling of calm to the conditioned stimulus. This process is repeated with increasing degrees of stimuli that produces the fear response.* |

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| *Theories of the purpose and function of sleep (REM and NREM) including restoration theory and evolutionary (circadian) theory* | Question 33<br>Research that reports that runners sleep for longer periods of time on the nights after running an ultramarathon supports<br>A. the restoration theory of sleep.<br>B. the circadian theory of sleep.<br>C. the evolutionary theory of sleep.<br>D. the ultradian theory of sleep. | *A* | *This research supports the restoration theory of sleep as more sleep is required to recover from the physical demands of running an ultramarathon.* |

*Use the following information to answer Question 34-35.*

Sylvia and Lucy are both police officers who are listening to a briefing from their superior that lists 20 locations of suspected crimes in the local area. Sylvia has a pen in her pocket and writes down as many locations as she can remember immediately after hearing the complete list of locations, whereas Lucy is less prepared and must wait until the end of the briefing to return to her desk, find a pen and write down as many locations as she can remember.

*The factors influencing a person's ability and inability to remember information, including context and state dependent cues, maintenance and elaborative rehearsal and serial position effect*

**Question 34**

Given the serial position effect, it is likely that

A. Lucy's recollection of the list of locations demonstrated a primacy and recency effect whereas Sylvia's recollection of the list only demonstrated a primacy effect.

B. Lucy's recollection of the list of locations demonstrated a primacy and recency effect whereas Sylvia's recollection of the list only demonstrated a recency effect.

C. Sylvia's recollection of the list of locations demonstrated a primacy and recency effect whereas Lucy's recollection of the list only demonstrated a primacy effect.

D. Sylvia's recollection of the list of locations demonstrated a primacy and recency effect whereas Lucy's recollection of the list only demonstrated a recency effect.

*C* *Sylvia demonstrated a primacy effect as she had time to rehearse and transfer the names of the first few locations to her long-term memory and a recency effect as the names of the final few locations remained in her short-term memory. As Lucy had a time delay, and possible distractions between the presentation of the information and her recall it is unlikely that she will experience a recency effect.*

*The factors influencing a person's ability and inability to remember information, including context and state dependent cues, maintenance and elaborative rehearsal and serial position effect*

**Question 35**

One reason that Sylvia demonstrates superior recall of the names of the locations compared to Lucy may be that

A. she has reconstructed the information.

B. procedural memory is influenced by the serial position effect.

C. semantic memory is not influenced by the serial position effect.

D. that long-term memory and short-term memory have different durations and capacities.

*D* *The main reason why Lucy will recall less information is because she will not demonstrate a recency effect. Lucy is likely to remember less information than Sylvia because the names of the locations are likely to have decayed from her STM through a lack of rehearsal or been displaced by other information which uses up the capacity of her STM.*

*Use the following information to answer Questions 36-39.*

Dr Clarke is conducting an experiment on the effect of taking a stimulant medication on attention.

*Identify and operationalise independent and dependent variables*

**Question 36**

Dr Clarke determines the precise dosage of the stimulant medication he will give the participants in his experimental group and ensures that it is taken 15 minutes after eating a meal three times a day for a period of two days. By doing this, Dr Clarke is

A. operationalising the independent variable of the experiment.
B. operationalising the dependent variable of the experiment.
C. using a matched participants experimental research design.
D. using a repeated measures experimental research design.

*A* *Dr Clarke is defining the independent variable (which is the presence or absence of the stimulant medication) in terms of how it is manipulated for the purposes of the experiment. This is operationalising the independent variable.*

*Minimise confounding and extraneous variables by considering type of sampling procedures, type of experiment, counterbalancing, single and double blind procedures, placebos, and standardised instructions and procedures*

**Question 37**

Dr Clarke also ensures that his control group receives a substance that looks identical to the stimulant medication but does not include any active ingredients. The substance that Dr Clarke gives to the control group is known as a

A. single blind.
B. placebo effect.
C. placebo.
D. double blind.

*C* *The inactive substance that Dr Clarke gives his control group is known as the placebo. Note that giving this substance to the control group allows him to control for the placebo effect by using a single blind procedure.*

*The characteristics of scientific research methodologies and techniques of primary qualitative and quantitative data collection relevant to the selected investigation: experiments, self-reports, questionnaires, interviews and/ or use of rating scales; reliability and validity of data; and minimisation of experimental bias and confounding and extraneous variables*

**Question 38**

To help Dr Clarke determine the effect of the stimulant medication on attention, he will interview all participants about their experiences of taking the drug, allowing the participants to describe how they felt in their own words. The type of data he is collecting is both

A. primary and quantitative.
B. secondary and quantitative.
C. primary and qualitative.
D. secondary and qualitative.

*C* *The data is primary in that it is collected by Dr Clarke himself and qualitative in that it involves descriptive, non-numeric responses.*

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| *Changes in levels of alertness as indicated by brain waves patterns (beta, alpha, theta, delta) due to drug-induced altered states of consciousness (stimulants and depressants)* | **Question 39**<br>If Dr Clarke were to also measure the participants with an EEG machine it would be expected that the experimental group would demonstrate<br>**A.** more alpha waves after ingesting the stimulant medication than the control group.<br>**B.** less beta waves after ingesting the stimulant medication than the control group.<br>**C.** less alpha waves after ingesting the stimulant medication than the control group.<br>**D.** more beta waves after ingesting the stimulant medication than the control group. | *D* | *Stimulant drugs generally have the effect of increasing the presence of beta waves in the brain.* |

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| *Sleep as a regular and naturally occurring altered state of consciousness that follows a circadian rhythm and involves the ultradian rhythms of REM and NREM Stages 1–4 sleep excluding corresponding brain wave patterns and physiological responses for each stage* | **Question 40**<br>Dreams occur<br>**A.** only in a hypnogogic state<br>**B.** only in NREM sleep<br>**C.** only in REM sleep<br>**D.** in both REM and NREM sleep | *D* | *Dreams occur in both NREM sleep and in REM sleep although the dreams from REM sleep tend to be more vivid and memorable than those experienced in NREM sleep.* |

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| *Sleep as a regular and naturally occurring altered state of consciousness that follows a circadian rhythm and involves the ultradian rhythms of REM and NREM Stages 1–4 sleep excluding corresponding brain wave patterns and physiological responses for each stage* | **Question 41**<br>An EMG would detect the lowest level of electrical activity at what stage of sleep?<br>**A.** NREM stage 1<br>**B.** NREM stage 2<br>**C.** NREM stage 3<br>**D.** REM | *D* | *The EMG would detect amplify and record the lowest level of electrical activity during REM sleep because at this stage the skeletal muscles of the body experience 'sleep paralysis' and make very few (if any) movements.* |

*Use the following information to answer Questions 42-43.*

Colin has been unemployed for six months. He frequently dwells on his unemployment, going over the reasons he was fired again and again in his head. Although he knows he is generally a good and hard-working person, he feels that he does not have the ability to successfully get a job in the future. He notices that he is finding it increasingly difficult to relax without drinking alcohol, which he is consuming regularly and excessively. Problems with alcohol have recently led his partner to request a separation from their relationship.

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| *The influence of psychological risk factors including rumination, impaired reasoning and memory, stress and poor self-efficacy* | **Question 42**<br>Colin's thought processes display<br>**A.** poor self-esteem.<br>**B.** poor self-efficacy.<br>**C.** impairment of memory.<br>**D.** coping flexibility. | *B* | *Although Colin has a good self-esteem ("he knows he is generally a good and hard-working person") he has a poor self-efficacy in that he judges himself to be unable to achieve the task of regaining employment.* |

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| *The concept of cumulative risk.* | **Question 43**<br>Colin's experience makes him vulnerable to developing a mental illness because of<br>**A.** cumulative risk.<br>**B.** decreasing risk.<br>**C.** coping flexibility.<br>**D.** social support. | *A* | *Colin has had exposure to a series of biological, psychological and social risk factors that build upon each other making him more at risk of developing a mental illness. This displays the concept of cumulative risk.* |

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| *The characteristics of scientific research methodologies and techniques of primary qualitative and quantitative data collection relevant to the selected investigation: experiments, self-reports, questionnaires, interviews and/ or use of rating scales; reliability and validity of data; and minimisation of experimental bias and confounding and extraneous variables* | **Question 44**<br>An experiment must<br>**A.** support the hypothesis.<br>**B.** establish a relationship between variables.<br>**C.** have a control condition and an experimental condition.<br>**D.** have an even number of participants in the control and experimental group. | *C* | *It is essential that every experiment have at least one control condition and one experimental condition in order to establish whether or not the independent variable has had an effect on the dependent variable.* |

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| *Organise, present and interpret data using tables, bar charts, line graphs, percentages, calculations of mean as a measure of central tendency and understanding of standard deviation as a measure of variation around the mean* | **Question 45**<br>The mean is a more accurate measure of central tendency when<br>**A.** the standard deviation of the data set is low.<br>**B.** the standard deviation of the data set is high.<br>**C.** primary data is used.<br>**D.** secondary data is used. | *A* | *When the standard deviation is low, there is a smaller spread of data in the data set and thus the mean provides a more accurate measure of central tendency than if the spread of data were high.* |

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| *The typical characteristics of a mentally healthy person, including high levels of functioning, social and emotional well-being and resilience to life stressors* | **Question 46**<br>A resilient individual<br>**A.** experiences few setbacks in life.<br>**B.** is always happy.<br>**C.** is able to adapt effectively to life stressors.<br>**D.** is more vulnerable to developing a mental illness. | *C* | *Resilience refers to the ability to adapt and cope with adverse situations and stressors.* |

*Use the following information to answer Questions 47-48.*

Amanda is learning a new song on the piano. She notices that she gets better the more she practices and makes fewer mistakes.

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| *Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning* | **Question 47**<br>In terms of synaptic plasticity, long-term depression is<br>A. helping Amanda to increase the strength of the synapses that are active when she plays the song.<br>B. helping Amanda to decrease the strength of synapses that were initially inappropriately activated and led to mistakes.<br>C. hindering Amanda's progress in learning the song.<br>D. lowering Amanda's mood. | *B* | *Long-term depression refers to the decrease in strength of synaptic connections between neurons that are not regularly activated together.* |

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| *Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning* | **Question 48**<br>In terms of synaptic plasticity, long-term potentiation is<br>A. allowing the action potential within the post-synaptic neuron to 'fire' more quickly<br>B. allowing the action potential within the pre-synaptic neuron to 'fire' more quickly.<br>C. allowing the pre-synaptic neuron to stimulate the post-synaptic neuron more frequently.<br>D. allowing the post-synaptic neuron to stimulate the pre-synaptic neuron more frequently. | *C* | *Long-term potentiation is the mechanism that strengthens the synapse of two neurons that 'fire together'. This allows the pre-synaptic neuron to stimulate the post-synaptic neuron more frequently.* |

*Use the following information to answer Questions 49-50.*

Bruce was waiting for a tram on a busy street when he witnessed a road accident involving a car and truck. A police officer quickly arrived at the scene of the crime and asked Bruce, 'How fast were the vehicles travelling before they slammed on their breaks and smashed into each other?'

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| *The reconstruction of memories as evidence for the fallibility of memory, with reference to Loftus' research into the effect of leading questions on eye-witness testimonies.* | **Question 49**<br>Bruce's response to this question is likely to be<br>A. a very accurate reflection of the events he witnessed.<br>B. more accurate if he were asked one month later.<br>C. more accurate if he were asked one day later.<br>D. biased by the presuppositions present in the question asked by the police officer. | *D* | *The police officer's question includes descriptive terms such as 'fast' 'slammed' and 'smashed' that presuppose an answer, leading Bruce to bias his response to be consistent with the implied speed.* |

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| *The factors influencing a person's ability and inability to remember information, including context and state dependent cues, maintenance and elaborative rehearsal and serial position effect* | **Question 50**<br>Two months later, a police officer is conducting a follow up investigation into the accident and asks Bruce to return to the location he was standing when he originally saw the accident take place. He is then asked some further questions about the events. By returning to the scene of the crime, the police officer is attempting to make use of<br>A. maintenance rehearsal.<br>B. elaborative rehearsal.<br>C. state dependent cues.<br>D. context dependent cues. | *D* | *Being in a similar environment when information is retrieved as to when it was learned acts as a context dependent cue that assists the retrieval of the information.* |

# Part B: Short answer and extended response

| VCAA Key Knowledge | Question | Answer guide |
|---|---|---|
| *The role of neurotransmitters in the transmission of neural information between neurons (lock-and-key process) to produce excitatory effects (as with glutamate) or inhibitory effects (as with gamma amino butyric acid [GABA])* | **Question 1** (4 marks)<br>Describe how the lock-and-key process works to create excitatory effects on the nervous system. In your response, refer to a relevant neurotransmitter. | **Answer:**<br>*The lock-key-process is a metaphor that explains the means by which a neurotransmitter influences the response of a post-synaptic neuron.*<br>• *Each neurotransmitter acts as a key, which has a chemically distinct shape.*<br>• *Receptor sites on the post-synaptic neuron have complementary shapes that can be affected by the relevant neurotransmitters.*<br>• *Neurotransmitters that have an excitatory effect, such as glutamate, make the post-synaptic neuron more likely to generate an action potential when they are received by the relevant receptor site.*<br><br>**Marking protocol:**<br>One mark for identifying that neurotransmitters have unique shapes and operate like 'keys'.<br>One mark for identifying that receptor sites have complementary shapes to different neurotransmitters and operate like 'locks'.<br>One mark for identifying that glutamate is an excitatory neurotransmitter.<br>One mark for identifying that excitatory neurotransmitters make the post-synaptic neuron more likely to 'fire' when received by a relevant receptor site.<br>Note that glutamate receptor sites (such as NMDA and AMPA) do not need to be mentioned by name in order to receive the marks for this response. |

Shams learnt to ride a bike at age 8 but has not ridden one for 10 years. On his 18th birthday he receives the gift of a new bike and is surprised to discover that he still knows how to ride.

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| *The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory* | **Question 2a** (1 mark)<br>What type of long-term memory is Shams drawing on when he rides a bike again as an adult? | **Answer:**<br>• *Shams is drawing on procedural long-term memory*<br><br>**Marking protocol:**<br>One mark for identifying the type of memory as procedural. |

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| *Interactions between specific regions of the brain (cerebral cortex, hippocampus, amygdala and cerebellum) in the storage of long-term memories, including implicit and explicit memories.* | **Question 2b** (2 marks)<br>Describe the role of Shams' cerebellum in his memory of how to ride a bike. | **Answer:**<br>*Shams' cerebellum would have been involved in any of the following:*<br>• *Processing of his memory of how to ride a bike.*<br>• *Encoding of his memory of how to ride a bike.*<br>• *Storage of his memory of how to ride a bike.*<br>• *Retrieval of his memory of how to ride a bike.*<br><br>**Marking protocol:**<br>One mark for identifying a relevant role of the cerebellum in procedural memory.<br>One mark for relating the role of the cerebellum back to the scenario of remembering how to ride a bike. |

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| *The distinctions between stress, phobia and anxiety; variation for individuals with stress, phobia and anxiety on a mental health continuum* | **Question 3** (2 marks)<br>What are two differences between stress and phobia? | **Answer:**<br>• *Stress is a part of normal experience, whereas phobia is considered abnormal (or phobia is considered a mental illness)*<br>• *Stress can be useful (such as eustress) whereas phobia is not useful (it is distressing by definition).*<br>• *Stress can involve both eustress and distress whereas phobia only involves distress.*<br>• *Many things can cause stress, whereas phobia is generally limited to a specific stressor.*<br>• *The cause of stress can be unknown, whereas the cause of the phobia is usually known.*<br>• *Any other legitimate difference*<br><br>**Marking protocol:**<br>One mark for any of the above points, to a maximum of two. |

Katherine got a promotion at work that was very demanding. Her response to this stressor was typical of that seen in the General Adaptation Syndrome and after two months in the new role she had developed a persistent cold and a lingering feeling of fatigue.

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| *Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol* | **Question 4a** (3 marks)<br>Describe how you would expect Katherine's resistance to stress to change during the alarm reaction stage and why you would expect the change to occur. | **Answer:**<br>• *Katherine would initially experience shock, where her resistance to stress would initially fall below her normal baseline level.*<br>• *When her fight-flight response activates, she will experience counter-shock where her resistance to stress rapidly increases to above her baseline level.*<br><br>**Marking protocol:**<br>One mark for explaining the experience of shock (involving a reduction in the resistance of stress).<br>One mark for explaining the experience counter shock (involving an increase in the level of resistance to stress).<br>One mark for identifying the fight-flight response as the mechanism that initiates the change in level of resistance to stress. |

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| *Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol* | **Question 4b** (4 marks)<br>What symptoms does Katherine experience that indicate that she has entered the third stage of the General Adaptation Syndrome? Describe the reason she may have entered this third stage, with reference to stress hormones. | **Answer:**<br>• *Both the presence of a persistent cold and a lingering feeling of fatigue indicate that Katherine is in the third stage (exhaustion) of the General Adaptation Syndrome.*<br>• *Prolonged exposure to a stressor has meant that Katherine has had sustained presence of an increased cortisol in her bloodstream.*<br>• *Cortisol has the effect of supressing the immune system, which makes Katherine more vulnerable to developing an illness.*<br>• *The symptoms of illness increase the pressure on the body to resist the stressor and lead to exhaustion.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

Ronald and his younger sister Suzie eat dinner with their parents regularly. One night after dinner, Ronald offers to clean the dishes for his parents. The following day his parents serve him an extra helping of dessert to say thank you. Following this meal, he again offers to do the dishes and he continues to do so as long as his parents reward him with extra helpings of dessert.

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| *Operant conditioning as a three-phase model (antecedent, behaviour, consequence) involving reinforcers (positive and negative) and punishment (including response cost) that can be used to change voluntary behaviours, including stimulus generalisation, stimulus discrimination and spontaneous recovery (excluding schedules of reinforcement)* | **Question 5a** (6 marks)<br>With reference to the scenario, explain three reasons why Ronald's dishwashing behaviour has been learnt through operant conditioning. | **Answer:**<br>• *Ronald's behaviour is driven by the consequences that follow it; receiving extra dessert has strengthened the behaviour of washing dishes.*<br>• *Ronald is active in learning the behaviour; he has to do a behaviour (washing the dishes) in order for the consequence to be delivered.*<br>• *Ronald's behaviour of dishwashing is carried out voluntarily.*<br>• *Ronald completes the behaviour of dishwashing before being presented with the reinforcing stimulus of extra dessert.*<br>• *There is a large time delay (of one day) between when Ronald performs the behaviour of dishwashing and when he is positively reinforced by the stimulus of extra dessert.*<br><br>**Marking protocol:**<br>Two marks for any of the above points, to a maximum of six, with one mark awarded for a clear link to the scenario for each of the above points. |

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| *observational learning as a method of social learning, particularly in children, involving attention, retention, reproduction, motivation and reinforcement* | **Question 5b** (2 marks)<br>One evening when Ronald is away at a school camp, Suzie offers to do the dishes after dinner in the hope of receiving an extra helping of dessert the following night. What sort of learning has Suzie displayed? Justify your answer with reference to the scenario. | **Answer:**<br>• *Suzie has displayed observational learning.*<br>• *Suzie has learned the dishwashing behaviour vicariously by watching Ronald do the dishes and receive extra helpings of dessert as a reinforcer.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

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| *The roles of different divisions of the nervous system (central and peripheral nervous systems and their associated sub-divisions) in responding to, and integrating and coordinating with, sensory stimuli received by the body* | **Question 6** (2 marks)<br>Priya decides to join her friends in a game of soccer. Describe the role of both the central and somatic nervous system required for Priya to kick the soccer ball during the game. | **Answer:**<br>Central nervous system - either of the following points:<br>• *Priya would coordinate the movement in her central nervous system (brain).*<br>• *Priya wold transmit the motor signals required for making the movement down her spinal cord.*<br><br>Somatic nervous system:<br>• *The somatic nervous system would carry the motor signal from the spinal cord to the relevant skeletal muscles required to make the kicking movement.*<br><br>**Marking protocol:**<br>One mark for one of the points related to the central nervous system.<br>One mark for the point related to the somatic nervous system. |

As a child, Max showed ambivalence and apprehension towards his parents. When frightened, he did not always return to his parents for comfort and on the relatively rare occasion that he sought close contact with his parents, he would avoid making eye contact with them.

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| *The influence of social risk factors including disorganised attachment, loss of a significant relationship and the role of stigma as a barrier to accessing treatment* | **Question 7a** (1 mark)<br>What risk factor for developing a mental disorder does Max display? | **Answer:**<br>• *Max is displaying disorganised attachment.*<br><br>**Marking protocol:**<br>One mark for the above point. |

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| *The influence of social risk factors including disorganised attachment, loss of a significant relationship and the role of stigma as a barrier to accessing treatment* | **Question 7b** (2 marks)<br>Will Max's early life experiences mean that he will develop a mental disorder as an adult? Justify your response. | **Answer:**<br>• *Max's early life experiences will not necessarily mean that he will develop a mental disorder as an adult.*<br>• *His experiences may increase the risk of developing a mental illness but will not guarantee that he will develop one.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

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| *Dot point/s here*<br>*The effects of chronic changes to the functioning of the nervous system due to interference to neurotransmitter Function, as illustrated by the role of dopamine in Parkinson's disease.* | **Question 8** (3 marks)<br>Name two common motor symptoms and one common cognitive symptom associated with Parkinson's disease. | **Answer:**<br>*Motor symptoms include:*<br>• *Resting tremor*<br>• *Rigidity*<br>• *Reduced coordination*<br>• *Reduced balance*<br>• *Slowness of movement (bradykinesia)*<br>• *Difficulty starting or stopping movements*<br>• *Inexpressive facial expressions*<br><br>*Cognitive symptoms include:*<br>• *Dementia*<br>• *Depression*<br><br>**Marking protocol:**<br>One mark for any of motor symptoms named (or any other relevant motor symptom), to a maximum of two.<br>One mark for naming either of the cognitive symptoms, or any other relevant cognitive symptom. |

A researcher is interested in conducting a repeated measures experiment into the effects of alcohol compared to sleep deprivation on concentration.

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| *The effects on consciousness (cognition, concentration and mood) of one night of full sleep deprivation as a comparison with effects of legal blood-alcohol concentrations.*<br><br>*Independent and dependent variables and operationalisation of variables* | **Question 9a** (2 marks)<br>What is the independent variable of this experiment and how could it be operationalised? | **Answer:**<br>• *The independent variable is whether participants have consumed alcohol or gone without sleep.*<br>• *This can be operationalised as having a blood alcohol concentration (BAC) of 0.10% (achieved by drinking 15 grams of alcohol until the BAC of 0.10% was reached) or going 24 hours without sleep.*<br><br>**Marking protocol:**<br>One mark for stating the independent variable.<br>One mark for operationalising the independent variable as above or with any other appropriate method. |

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| *The effects on consciousness (cognition, concentration and mood) of one night of full sleep deprivation as a comparison with effects of legal blood-alcohol concentrations.*<br><br>*Use an appropriate experimental research design including independent groups, matched participants, repeated measures and cross-sectional studies*<br><br>*Evaluate investigative procedures and possible sources of bias, and suggest improvements, with reference to identification of potential extraneous and confounding variables including individual participant differences, non-standardised instructions and procedures, order effects, experimenter effect and placebo effects* | **Question 9b** (2 marks)<br>How would the researcher achieve a repeated measures design and what possible extraneous variable might using this design introduce? | **Answer:**<br>• *The researcher would ensure that each member of the sample completed the test of concentration when tired and again when under the influence of alcohol.*<br>• *This could introduce a potential order effect.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

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| *The effects on consciousness (cognition, concentration and mood) of one night of full sleep deprivation as a comparison with effects of legal blood-alcohol concentrations.*<br><br>*Use an appropriate experimental research design including independent groups, matched participants, repeated measures and cross-sectional studies* | **Question 9c** (1 mark)<br>What is a potential advantage of using the repeated measures experimental design? | **Answer:**<br>• *Eliminate participant variation as a potential extraneous variable.*<br>• *Fewer research participants can be used.*<br><br>**Marking protocol:**<br>One mark for any of the above points (or any other relevant point). |

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| *The effects on consciousness (cognition, concentration and mood) of one night of full sleep deprivation as a comparison with effects of legal blood-alcohol concentrations.* | **Question 9d** (1 mark)<br>Based on prior research in this area, how would you expect a blood alcohol concentration (BAC) of 0.10% to affect performance on a hand-eye coordination task compared to 24 hours of sleep deprivation? | **Answer:**<br>• *People who have a BAC of 0.10% and people who have had 24 hours of sleep deprivation are likely to show a similar level of performance on the hand-eye coordination task.*<br><br>**Marking protocol:**<br>One mark for the above point. |

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| *The distinction between dyssomnias (including narcolepsy and sleep-onset insomnia) and parasomnias (including sleep apnoea and sleep walking) with reference to the effects on a person's sleep-wake cycle* | **Question 10** (4 marks)<br>Using examples, explain how dyssomnias differ from parasomnias. | **Answer:**<br>• *The term dyssomnia typically refers to problems that affect the sleep-wake cycle, such as sleep-onset insomnia, whereas the term parasomnia refers to abnormal sleep related events that interrupt sleep such as sleep waking.*<br><br>**Marking protocol:**<br>One mark for a definition of dyssomnia<br>One mark for an example of a dyssomnia<br>One mark for a definition of parasomnia<br>One mark for an example of a parasomnia<br>Note a comparison term must be used (such as "whereas") |

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| *Dot point/s here*<br>*The distinction between dyssomnias (including narcolepsy and sleep-onset insomnia) and parasomnias (including sleep apnoea and sleep walking) with reference to the effects on a person's sleep-wake cycle* | **Question 11** (2 marks)<br>How can sleep-onset insomnia lead to the development of other sleep phase disorders? | **Answer:**<br>• *Many people who consistently have trouble falling asleep can find it more difficult to wake up in the morning.*<br>• *This pattern of falling asleep later and waking up later can disrupt the circadian rhythm of the sleep-wake cycle, possibly creating a delayed sleep phase disorder.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

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| *The influence of biological risk factors including genetic vulnerability to specific disorders, poor response to medication due to genetic factors, poor sleep and substance use* | **Question 12** (2 marks)<br>What is the relationship between poor sleep and mental health? | **Answer:**<br>• *Poor sleep can impair our experience and regulation of thought processes (cognition) and emotions (affect) and thus have a negative influence on our mental health.*<br>• *Many people who experience a mental illness also experience problems with sleep (leading to poor sleep).*<br>• *Poor sleep is a risk factor for the development of mental disorders.*<br>• *Changing sleep habits (and getting adequate sleep) can help improve mental health.*<br><br>**Marking protocol:**<br>One mark for any two of the above points, to a maximum of two. |

Dr Gibson is investigating whether it is beneficial to add pharmacological treatment to cognitive-behavioural therapy (CBT) when treating specific phobia. She places as advertisement for the participants in a local newspaper that asks for volunteers who meet the diagnostic criteria for specific phobia and gathers 40 eligible participants.

Dr Gibson ensures participants are fully informed of the nature of the research including any potential risks associated with participation and the rights of the participants. Once the participants signed a written consent form, she then divides the participants into two groups by flipping a coin.

Group A receives a treatment involving weekly one hour long CBT sessions and medication; tablets containing 0.25mg of the benzodiazepine Xanax to be taken three times a day.

Group B receives a treatment involving weekly one hour long CBT sessions and placebo pills to be taken three times a day.

The participants are unaware as to which group they have been allocated to.

The participants are given self-report tests to rate their experience of phobic symptoms out of 10 (1 being no experience of symptoms and 10 being an extreme experience of symptoms) at set time intervals of day 1, after 1 month, after 3 months, after 6 months, and after 12 months.

The results of the research investigation are summarised in figure 1.

| | Day 1 | After 1 month | After 3 months | After 6 months | After 12 months |
|---|---|---|---|---|---|
| Group A (CBT + Medication) | 7.45 | 4.5 | 3.55 | 3.25 | 3.15 |
| Group B (CBT + Placebo) | 7.9 | 5.95 | 5.05 | 3.95 | 3.35 |

**Figure 1.** Mean self-report specific phobia symptoms out of 10.

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| *Identify and operationalise independent and dependent variables* | **Question 13a** (2 marks)<br>Identify and operationalise the dependent variable of Dr Gibson's experiment. | **Answer:**<br>• *The dependent variable was the extent of phobic symptoms experienced by participants.*<br>• *The dependent variable was operationalised as a self-report measure out of 10, indicating the severity of the symptoms of the specific phobia experienced by participants.*<br><br>**Marking protocol:**<br>One mark for each of the above points. |

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| *Determine aims, research hypotheses, questions and predictions that can be tested* | **Question 13b** (2 marks)<br>What was the hypothesis of Dr Gibson's experiment? | **Answer:**<br>• *It was hypothesised that people who use a combination of CBT and Xanax medication to treat a specific phobia would experience a faster/greater reduction in the extent of the experience of phobic symptoms compared to those who use CBT alone.*<br><br>**Marking protocol:**<br>The answer must be a statement of prediction about the results of the experiment. If this is completed, then award:<br>• One mark for a reference to the independent variable (whether participants used a combination of Xanax and CBT or CBT alone to manage their specific phobia).<br>• One mark for a reference to the dependent variable (the extent of phobic symptoms experienced). |

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| *Ethical implications in the study of, and research into, mental health, including informed consent and use of placebo treatments.* | **Question 13c** (2 marks)<br>Dr Gibson submitted her research proposal before an ethics committee prior to conducting the experiment, who deemed the use of the placebo treatment permissible for this experiment. Provide two reasons why it is ethically permissible to use a placebo treatment in this experiment. | **Answer:**<br>• *There is a low risk of harm to participants.*<br>• *Participants have been fully informed of the risks involved with participation and their rights as participants.*<br>• *The research question is justifiable.*<br><br>**Marking protocol:**<br>One mark for any of the above points, to a maximum of two. |

*Evidence-based interventions and their use for specific phobia with reference to: the use of short-acting anti-anxiety benzodiazepine agents (gamma amino butyric acid [GABA] antagonists) in the management of phobic anxiety and relaxation techniques including breathing retraining and exercise (biological); the use of cognitive behavioural therapy (CBT) and systematic desensitisation as ~~p~~psychotherapeutic treatments of phobia (psychological); psychoeducation for families/supporters with reference to challenging unrealistic or anxious thoughts and not encouraging avoidance behaviours (social).*

*The psychological concepts specific to the investigation and their significance, including definitions of key terms, and psychological representations*

*The characteristics of scientific research methodologies and techniques of primary qualitative and quantitative data collection relevant to the selected investigation: experiments, self-reports, questionnaires, interviews and/ or use of rating scales; reliability and validity of data; and minimisation of experimental bias and confounding and extraneous variables*

*Methods of organising, analysing and evaluating primary data to identify patterns and relationships including sources of error and limitations of data and methodologies*

*The nature of evidence that supports or refutes a hypothesis, model or theory*

*Generalisability of statistics from samples to the populations from which the sample was derived*

**Question 13d**
(8 marks)
What can be concluded about the effect of medication (Xanax) on the treatment of specific phobia from this research? In your response consider

- The results of the research
- Possible limitations of the research
- The extent to which the results can be generalised

**Answer (suggested answer, worth full marks):**

*The results of the research indicate that the addition of pharmacological intervention to CBT therapy can be a beneficial strategy in the short-term management of specific phobia. Participants in both group A (who took Xanax in addition to weekly CBT sessions) and group B (who completed weekly CBT sessions alone) improved their experience of specific phobia over the course of the experiment. The participants in group A showed a faster reduction in the severity of phobic symptoms than those in group B as evidenced by the greater reduction in phobic symptoms reported after 1 and 3 months by group A compared to group B. However, after this initial period the rate of reduction of phobic symptoms diminished for group A, and after 1 year, group B had reported phobic symptoms that were only negligibly more severe than those reported by group A.*

*Nevertheless, the experiment was limited in many ways. Each participant would have had their own unique phobic stimulus and the extent to which they experience the symptoms of that phobia would be influenced by the frequency in which they encounter the phobic stimulus. As participants were randomly allocated into the two groups, this extraneous variable related to individual participant differences may have compromised the internal validity of the data.*

*The experiment also relied on self-report scales that could be unreliable. Participants may have recorded a rating that reflected a more socially desirable outcome or indicated improvement in symptomology, to match the researcher's expectations.*

*Furthermore, the data provided does not include any inferential statistics that would allow the statistical significance of the data to be established. Without this information, it is impossible to make a valid interpretation of the data.*

*The external validity of the experiment is compromised by the use of convenience sampling, as well as the use of a small sample size. In light of this, as well as the other limitations affecting the data, the results of the experiment are unable to be generalised to a broader population. Nevertheless, the results do indicate that the use of Xanax in combination with CBT may assist the management of specific phobia in the short-term.*

**Marking protocol:**

This question is marked in a globally, out of a total eight marks. Outstanding responses will

- make direct reference to the results obtained in the experiment and critically analyse these results in relation to the extent to which they can be used to draw conclusions on the influence of Xanax in combination with CBT on the management of specific phobia
- insightfully critique the experiment in terms of the multiple limitations of the research
- state that the results of experiment cannot be generalised and support the rationale of this decision
- use relevant key terms from the practical investigation and research methodology dot points
- write coherently and fluently

*Consciousness as a psychological construct that varies along a continuum, broadly categorised into normal waking consciousness and altered states of consciousness (naturally occurring and induced)*

*The measurement of physiological responses to indicate different states of consciousness, including electroencephalograph (EEG), electromyograph (EMG), electro-oculograph (EOG) and other techniques to investigate consciousness (measurement of speed and accuracy on cognitive tasks, subjective reporting of consciousness, including sleep diaries, and video monitoring)*

*Changes in a person's psychological state due to levels of awareness, controlled and automatic processes, content limitations, perceptual and cognitive distortions, emotional awareness, self-control and time orientation*

*Changes in levels of alertness as indicated by brain waves patterns (beta, alpha, theta, delta) due to drug-induced altered states of consciousness (stimulants and depressants)*

**Question 14**

(10 marks)

Fred is a doctor at an emergency ward in an urban hospital. He is currently seeing a patient named Simon, who is a cyclist that has just been hit by a passing car. Fred is concerned that Simon is suffering a concussion and has entered into an altered state of consciousness. Drawing on your understanding of the psychological and physiological differences between normal waking consciousness and altered states of consciousness, suggest how Fred could test to see if the cyclist is in an altered state of consciousness.

**Answer (suggested answer, worth full marks):**

*To test for psychological indicators that Simon has entered into an altered state of consciousness, Fred could try the following approaches:*

- *Fred could ask the cyclist to complete a controlled process such as reciting the alphabet backwards, or a Stroop task. If Simon is unable to do these tasks, or takes much longer than the expected time to complete them, it may indicate that he could be in an altered state of consciousness.*
- *Fred could ask the cyclist to give a description of what he had been doing earlier in the day. If Simon's recollection appears unusual or disjointed it may indicate that he has lowered his content limitations or is experiencing distortions of cognition, indicating that he could be in an altered state of consciousness.*
- *Fred could ask for Simon to state his name and date of birth. If the answers he provides do not match his identity cards, he may be experiencing distortions of cognition, indicating that he could be in an altered state of consciousness.*
- *Fred could ask Simon if he has blurred vision, or experiencing any other perceptual abnormality. If Simon reports changes in perceptual experiences, it could indicate that he is experiencing an altered state of consciousness.*
- *Fred could ask Simon to describe how he feels emotionally. Given that the experience of being hit by a car is likely to be fairly traumatic, Fred would not expect Simon to indicate signs of extreme happiness or a complete lack of emotional reaction to the event. Unusual or inappropriate expressions of emotion may indicate that he is experiencing an altered state of consciousness.*
- *Fred could ask the cyclist to walk in a straight line. If the cyclist is unable to do this, it may indicate that he has a lowered level of self-control and that he could be in an altered state of consciousness.*
- *Fred could ask Simon to indicate how much time had passed since the accident. If Simon significantly overestimates or underestimates the amount of time that has passed, it may indicate a distortion of his time orientation, indicating that he could be in an altered state of consciousness.*
- *Fred could ask Simon to rate his level of awareness that he experienced prior to the accident. This self-report information would provide an indication of Simon's subjective experience of consciousness. Any significant changes reported by Simon may indicate that he is in an altered state of consciousness.*
- *Fred could monitor Simon's behaviour using video monitoring. If the footage shows any unusual or uncharacteristic changes in Simon's behaviour it may indicate that he is in an altered state of consciousness.*

*To test for physiological indicators that Simon has entered into an altered state of consciousness, Fred could try the following approaches:*

- *Fred could use an EEG machine to measure the electrical activity of Simon's brain. If the EEG shows brainwaves other than those associated with normal waking consciousness (beta or alpha waves), it may indicate that he could be in an altered state of consciousness.*

Marking protocol:
This question is marked in a globally out of a total 10 marks.
Outstanding responses will

- list relevant ways of testing the effects of an altered state of consciousness
- explain how responses to these tests would indicate an altered state of consciousness
- explicitly link the test and response to the scenario of the bicycle accident and/or its consequences
- include at least five (but ideally more) different tests of consciousness
- demonstrate a detailed understanding of the characteristics of altered states of consciousness (in terms of the associated psychological and physiological changes)
- write coherently and fluently

In terms of the criteria outlined in the 2017-2021 VCE Psychology exam specifications, a 10-mark answer should demonstrate (*linked to this question in brackets*):

- identification and explanation of formal psychological terminology relevant to the question (*Explicitly name and explain the test used to evaluate the state of consciousness and outline how this would indicate a possible change from normal waking consciousness*)
- use of appropriate psychology terminology (*Use key terms from the study design relevant to this question*)
- discussion of relevant psychological information, ideas, concepts, theories and/or models and (*Outline how the results of these tests could be used as information to evaluate Simon's state of consciousness, demonstrating a detailed understanding of the characteristics of normal waking consciousness and altered states of consciousness.*)
- the connections between them (*Link multiple psychological concepts coherently together in the explanation of how one could determine Simon's state of consciousness.*)
- analysis and evaluation of data, methods and scientific models, drawing of evidence-based conclusions and explanation of limitations of conclusions (*State how the results of the various test of consciousness could be used to draw an evidence-based conclusion regarding Simon's state of consciousness*)

 

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# VCE PSYCHOLOGY
Written Examination
# ANSWER SHEET – 2017

**STUDENT NAME:**

Use a **PENCIL** for **ALL** entries. For each question, shade the box which indicates your answer.

Marks will **NOT** be deducted for incorrect answers.

**NO MARK** will be given if more than one answer is completed for any question.

If you make a mistake, **ERASE** the incorrect answer – **DO NOT** cross it out.

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