Units 3&4 Psychology 2020 – Assessment Guide

Section A

VCAA Key Knowledge	Question	Answer guide
	Use the following information to answer Questions 1-3. Alice and Chester are both trying to meditate by focusing all of their awareness on their breath. Alice is focusing very hard and achieves a deep state of meditation, but Chester has become distracted, given up on meditating, and has drifted into a daydream.	
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 1** In terms of content limitations, it is likely that **A.** Alice is experiencing fewer limitations than Chester. **B.** Chester is experiencing fewer limitations than Alice. **C.** Alice and Chester would be experiencing a similar level of content limitations. **D.** Alice and Chester would not be experiencing content limitations.	***B*** *Chester's daydreaming is an altered state of consciousness which is characterised by lowered content limitations, whereas Alice's state of meditation involves actively restricting the content that enters her awareness.*
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 2** In terms of time orientation, **A.** Alice is likely to experience a change in her perception of time, whereas Chester is unlikely to experience a change in his perception of time. **B.** Chester is likely to experience a change in his perception of time, whereas Alice is unlikely to experience a change in her perception of time. **C.** Alice and Chester are both likely to experience a distortion of their perception of time. **D.** Alice and Chester will find that their experience of the passage of time is not altered.	***C*** *Both meditation (as displayed by Alice) and daydreaming (as displayed by Chester) are likely to involve a change in an individuals' perception of the passage of time, given that both are altered states of consciousness.*

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 3

While Alice is meditating and Chester is daydreaming, a bell rings, indicating the end of the session, but both Chester and Alice fail to consciously register the sensation of the sound of the bell. This is because they are demonstrating

A. changes to self-control.
B. perceptual distortions.
C. cognitive distortions.
D. changes to emotional awareness.

B *Both meditation (as displayed by Alice) and daydreaming (as displayed by Chester) can lead to perceptual distortions, such as changes to the level of awareness of sensory information (such as the bell).*

Use the following information to answer Questions 4-7.

Mr Horovitz is a Physical Education teacher who is researching the effect of relaxation exercises on swimming speed. He asks his Year 11 class to listen to a half-hour audio recording of guided relaxation exercises, while he asks his Year 7 class to listen to half-hour non-relaxing audio recording (a podcast on economics). After listening to the audio clips, the students are then asked to swim 100 metres, and their times are recorded.

The results indicated that the students who listened to the guided relaxation exercises before swimming were faster on average than those who did not.

The next week, he repeated the experiment and found very similar results.

He showed the results to his colleague, Mr Diamond, who suggested that there may have been a confounding variable affecting the results.

identify and operationalise independent and dependent variables

Question 4

In this experiment, the dependent variable is operationalised as

A. sporting performance.
B. listening to guided relaxation exercises.
C. the time spent listening to the guided relaxation exercises.
D. the time taken to swim 100 metres.

D *The dependent variable is what is measured in an experiment. In this experiment, Mr Horovitz is measuring the time taken to swim 100 metres.*

use basic principles of reliability and validity in evaluating research investigations undertaken	**Question 5** In this experiment, the podcast on economics functioned as a **A.** standardised procedure. **B.** means to counterbalance the participants. **C.** single-blind procedure. **D.** placebo.	*D* *The podcast is a placebo as it mimics the same qualities as the active manipulation of the independent variable (the recorded audio of relaxation exercises) but does not expose these participants to the active manipulation of the independent variable (relaxation exercises). Note that the placebo treatment is the means of achieving a single-blind procedure.*

use basic principles of reliability and validity in evaluating research investigations undertaken	**Question 6** It could be said that Mr Horovitz's results were **A.** valid and reliable. **B.** valid but not reliable. **C.** reliable but not valid. **D.** neither valid nor reliable.	*C* *Mr Horovitz's results are consistent over time (and therefore reliable) but not valid, as the results were affected by confounding variables.*

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 7** Mr Diamond suggests that Mr Horovitz could minimise the impact of individual participant differences on his results most effectively by **A.** using random sampling. **B.** using an independent groups experimental design. **C.** using a matched participants experimental design. **D.** using a counterbalanced repeated measures experimental design.	*D* *Extraneous and confounding variables arising from individual participant differences are best controlled for by using a repeated measures design, as the same participants undertake all experimental conditions. A repeated measures design provides more control over individual participant differences than the independent groups and matched participants designs. Also note that sampling procedures, such as random sampling, will not control for the extraneous variables created by individual participant differences.*

Use the following information to answer Questions 8-15.

Jane falls off her bike and is rushed to the hospital.

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 8

To test the nature of her injuries, a doctor asks Jane to shake his hand. Jane is able to shake the doctor's hand, but says that she cannot feel the sensation of her hand being touched. The doctor is likely to suspect that Jane has suffered damage to

A. the efferent pathway of her somatic nervous system.
B. the afferent pathway of her somatic nervous system.
C. the efferent pathway of her autonomic nervous system.
D. the afferent pathway of her autonomic nervous system.

B The afferent (sensory) pathway of the somatic nervous system is responsible for transmitting sensory signals from the hands to the central nervous system.

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 9

The doctor also checks Jane's heart rate and finds that it is beating at a much faster rate than her typical resting heart rate. It is likely that her heart rate has been elevated by

A. the efferent pathway of her somatic nervous system.
B. the afferent pathway of her somatic nervous system.
C. the efferent pathway of her autonomic nervous system.
D. the afferent pathway of her autonomic nervous system.

C The efferent (motor) pathway of the autonomic nervous system connects the central nervous system to the heart and other internal muscles organs and glands. This allows Jane to elevate her heart rate as a part of her stress response to the injury.

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 10

Jane tells the doctor that she is feeling nauseated and sick in her stomach. This feeling of sickness in Jane's stomach is communicated to Jane's brain via

A. the efferent pathway of her somatic nervous system.
B. the afferent pathway of her somatic nervous system.
C. the efferent pathway of her autonomic nervous system.
D. the afferent pathway of her autonomic nervous system.

D The afferent (sensory) pathway of the autonomic nervous system connects the non-skeletal muscles organs and glands (including the stomach) to the central nervous system, allowing the transmission of sensory information, such as pain.

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 11

The doctor asks if Jane can remember what happened at the time of the accident. Jane's explicit memory of the accident has been stored by her

A. central nervous system.
B. autonomic nervous system.
C. peripheral nervous system.
D. somatic nervous system.

A Explicit, episodic memory is stored by neurons in the brain, which is a part of the central nervous system.

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 12

The consolidation of Jane's memory of the accident is likely to have been enhanced by

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

A *Emotionally arousing experiences, such as a bike accident, lead to the increased release of adrenaline, which can enhance the consolidation of memories formed under these conditions.*

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 13

Jane's memory of the accident is a type of

A. episodic long-term memory.
B. procedural long-term memory.
C. short-term memory.
D. semantic long-term memory.

A *The memory of the crash has been stored for longer than the capacity of short-term memory, indicating that it has been transferred to the long-term memory store. The information she is recalling is based on her personal, subjective, lived experience of the crash, and is therefore an episodic memory.*

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 14

Jane's doctor wants to ask her more about her memory of the accident. Which question would provide Jane's doctor with the least biased account of the accident?

A. Do you remember the number plate of the car that swerved towards you prior to your accident?
B. How agonising was the pain you felt when you fell off your bike onto the bitumen?
C. Could you describe the situation that led you to be brought to hospital?
D. Were you upset by the amount of blood you saw when the accident occurred?

C *Option C is an example of a question that does not presuppose any answer (except that she was brought to a hospital – which could be inferred by her surroundings). All other options are examples of leading questions, in that they contain presuppositions of details of the event in the question. Leading questions can lead to a biased recollection of (episodic) memory.*

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 15

Jane finds it hard to remember some of the specific details of the accident, but after being released from the hospital, she drives past the place where the accident occurred. Suddenly, she finds herself remembering more of the details of what occurred. This demonstrates the influence of

A. the serial position effect.
B. context dependent cues.
C. state dependent cues.
D. the reconstructive nature of memory.

B *In this situation, elements from the environment in which the memory was formed aid the retrieval of that memory of the information that was formed in that environment (i.e., the place where the accident occurred jogs the memory of the details of the accident). This demonstrates the effect of context dependent cues.*

Use the following information to answer Questions 16-20.

Zane's house is located on a road which is having noisy repair works being completed over three days and nights. He finds himself having frequently disrupted sleep during the period of the roadworks.

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

Question 16

Which of the following would Zane be likely to experience after one night of disrupted sleep?

A. a relaxation of his muscles
B. hallucinations
C. increased levels of irritability
D. an enhanced sense wellbeing

C Increased irritability is a common psychological response to partial sleep deprivation. Note that while it is possible to hallucinate after prolonged periods of severe sleep deprivation, it is unlikely that Zane will have developed hallucinations after one night of partial sleep deprivation.

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 17

In terms of the cognitive impact of Zane's sleep deprivation after one night,

A. Zane's level of cognitive impairment is likely to be less than an individual with a blood alcohol concentration (BAC) of 0.10%.
B. Zane's level of cognitive impairment is likely to be the same as an individual with a blood alcohol concentration (BAC) of 0.10%.
C. Zane's level of cognitive impairment is likely to be the higher than an individual with a blood alcohol concentration (BAC) of 0.10%.
D. Zane is unlikely to show any cognitive impairment related to his sleep deprivation.

A Research indicates that 24 hours of total sleep deprivation leads to a similar level of cognitive impairment as an individual with a BAC of 0.10%. As Zane's sleep deprivation is partial, and he receives at least some sleep each night, it is unlikely that his he would experience as significant cognitive impairments as an individual with a BAC of 0.10%.

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

Question 18

On the fourth night, once the roadworks have stopped, it would be likely that

A. Zane will sleep in for the same number of hours that he lost in the three nights of disrupted sleep.
B. Zane will sleep for less time than he typically would.
C. Zane will sleep in longer than normal, but not necessarily all the hours that he lost in the nights of disrupted sleep.
D. Zane will return to his typical circadian rhythm.

C Sleep deprivation leads to the accumulation of sleep debt, but not all sleep debt needs to be recovered for people to return to a normal level of functioning. Typical recovery patterns from prolonged experiences of sleep deprivation are characterised by sleeping longer than normal for a few nights before returning to a typical circadian rhythm.

theories of the purpose and function of sleep (REM and NREM) including restoration theory and evolutionary (circadian) theory	Question 19 Once the works have stopped, Zane's sleep recovery pattern should support the A. evolutionary theory of sleep. B. restoration theory of sleep. C. circadian theory of sleep. D. ecological theory of sleep.	*B* *The restoration theory of sleep highlights that sleep is essential to help the body rest and recover. This helps to explain why people sleep longer after periods of sleep deprivation. The evolutionary theory of sleep highlights the way in which our sleeping requirements help promote the survival of our species. While Zane sleeping longer after a period of partial sleep deprivation does not contradict the evolutionary theory of sleep, it does not provide evidence that supports the premise of this theory.*

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 20 Zane's sleep would be considered A. a naturally occurring altered state of consciousness. B. an induced altered state of consciousness. C. a naturally occurring state of normal waking consciousness. D. an induced state of normal waking consciousness.	*A* *Sleep is an altered state of consciousness that does not generally require any aid to induce this state, so it would be considered a naturally occurring altered state of consciousness.*

Use the following information to answer Questions 21-25.
Dr Lina is treating three patients in a neurology ward.

Her first patient, Eric, has been diagnosed with Parkinson's disease.

Her second patient, Harpreet, is experiencing the early stages of what she suspects to be Alzheimer's disease.

Her third patient, Henry, has recently had his hippocampus removed, to reduce the frequency and severity of seizures that he had been experiencing.

the effects of chronic changes to the functioning of the nervous system due to interference to neurotransmitter function, illustrated by the role of dopamine in Parkinson's disease.

Question 21

A motor symptom that Eric is likely to be experiencing is

A. intention tremor.
B. depression.
C. resting tremor.
D. kinetic tremor.

C Resting tremor (a muscle tremor that occurs when muscle activity is absent) is a common motor symptom of Parkinson's disease. Intention tremor (tremor that occurs with goal directed behaviour and worsens when approaching the target) and kinetic tremor (tremor that occurs with voluntary movement) are not symptoms of Parkinson's disease. Depression is often comorbid with Parkinson's disease but is not a motor symptom of the condition.

the effects of chronic changes to the functioning of the nervous system due to interference to neurotransmitter function, illustrated by the role of dopamine in Parkinson's disease.

Question 22

In comparison to a healthy adult, Eric has

A. fewer dopamine producing cells in his substantia nigra.
B. fewer GABA producing cells in his substantia nigra.
C. more dopamine producing cells in his substantia nigra.
D. more GABA producing cells in his substantia nigra.

A The symptoms of Parkinson's disease are caused by the degeneration of dopaminergic cells in the substantia nigra.

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 23

Dr Lina is considering Harpreet's symptoms to help form her diagnosis. What is a cognitive impairment that Harpreet is likely to demonstrate?

A. sleep deprivation
B. difficulty regulating her breathing and heart rate
C. losses of procedural memory
D. losses of declarative memory

D Memory loss for recently formed declarative long-term memory is a common early symptom of Alzheimer's disease. The loss of procedural long-term memory is less common in the early stages of the condition.

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 24

In comparison to Eric's brain, it is likely that Harpreet's hippocampus has

A. fewer dopamine producing cells.
B. the presence of amyloid plaques between neurons and neurofibrillary tangles within neurons.
C. fewer GABA producing cells.
D. the presence of amyloid plaques within neurons and neurofibrillary tangles between neurons.

B *Alzheimer's disease is characterised by the presence of amyloid plaques between neurons (that disrupt communication between neurons) and neurofibrillary tangles within neurons (which leads to the death of neurons).*

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 25

It is likely that Harpreet's memory is

A. more impaired than Eric's and Henry's.
B. less impaired than Eric's and Henry's.
C. more impaired than Eric's, but less impaired than Henry's.
D. less impaired than Eric's, but more impaired than Henry's.

C *As the hippocampus is essential for the consolidation of declarative memory, the removal of the structure is likely to have a profound and immediate impact on Henry's memory. As Harpreet is in the early stages of Alzheimer's disease, it is likely that her memory impairments will be less significant than Henry's. Parkinson's disease (as experienced by Eric) may be linked to some memory impairment but the impairment is generally not as severe as in Alzheimer's disease (which is characterised by memory impairment).*

Use the following information to answer Questions 26-28.

One evening Ellis cleans the dishes, without being asked. When his father sees the clean dishes, he gives Ellis a high five and says, "I'm so proud of you". He then adds that Ellis will not have to do his other normal chores (of taking out the garbage and cleaning the bathroom) this week. Ellis' sister, Madeline, watches Ellis being praised by their father, and the following night, decides to wash the dishes unprompted.

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 26

What consequence is applied to Ellis' behaviour of washing the dishes?

A. self-reinforcement and vicarious reinforcement
B. positive reinforcement and negative reinforcement
C. positive reinforcement
D. positive reinforcement and response cost

B *Elli's father applies both positive reinforcement (through a high five, and saying "I'm so proud of you") and negative reinforcement (by removing an unpleasant stimulus of his regular weekly chores).*

observational learning as a method of social learning, particularly in children, involving attention, retention, reproduction, motivation and reinforcement

Question 27

In this scenario, Madeline's dishwashing behaviour is best explained by

A. classical conditioning, because there is an association between two stimuli.
B. operant conditioning, because the behaviour is dependent on the consequences of the action.
C. observational learning, because the she has learned vicariously.
D. operant conditioning, because it is a voluntary behaviour.

C *Madeline's dishwashing has been learned vicariously, by observing the antecedent, behaviour and consequence applied to Ellis' voluntary behaviour. For Ellis, dishwashing may have been learned through operant conditioning, but for Madeline, it has been learned through observation of her brother (who is, in this case, the model).*

observational learning as a method of social learning, particularly in children, involving attention, retention, reproduction, motivation and reinforcement

Question 28

Madeline's behaviour of washing the dishes was prompted by _____ and may be sustained through _____.

A. self-reinforcement; external reinforcement
B. self-reinforcement; vicarious reinforcement
C. external reinforcement; vicarious reinforcement
D. vicarious reinforcement; self-reinforcement.

D *Madeline's behaviour of washing the dishes was prompted by observing her brother be reinforced by being praised by their father. This provides vicarious reinforcement for the behaviour. If Madeline feels a sense of accomplishment for doing the dishes, she will self-reinforce the behaviour making her more likely to wash the dishes again in the future.*

Use the following information to answer Questions 29 and 30.

Jade is happy and confident; she has always found life easy and makes time to socialise with her friends whenever she can. One of her friends, Tony, has had a more challenging life. Despite being born with a physical disability, Tony has been able to sustain a meaningful career and contribute to his community. Tony often finds life to be tough, but he can endure the hardships and ultimately judges his life as "worthwhile".

mental health as a continuum (mentally healthy, mental health problems, mental disorders) influenced by internal and external factors that can fluctuate over time

Question 29

Based on the information provided, it appears that

A. Jade can be considered mentally healthy, while Tony can be considered to have a mental disorder.
B. Jade can be considered mentally healthy, while Tony can be considered to have a mental health problem.
C. Jade and Tony can both be considered mentally healthy.
D. Jade and Tony can both be considered to have mental health problems.

C *The World Health Organisation states that mental health is "a state of wellbeing in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community." This definition applies equally to the information provided about both Jade and Tony.*

the typical characteristics of a mentally healthy person, including high levels of functioning, social and emotional well-being and resilience to life stressors

Question 30

Based on the information provided in the scenario, it is clear that Tony demonstrates the quality of

A. resilience.
B. stigma.
C. dysfunction.
D. happiness.

A *Tony demonstrates the quality of resilience; the ability to recover from adversity. He may suffer from stigma for his physical disability, but that is not clear in the scenario. He may be happy, but the scenario states that he often finds life to be "tough". The most defining characteristic of Tony's mental health is his resilience.*

Use the following information to answer Questions 31-34.

Jennifer has been playing tennis casually for years, but recently decided to get lessons to try and improve her game. Her tennis coach told her that her serving technique was incorrect and taught her a new, more effective way to serve a tennis ball. After practicing the new serving technique for an hour, Jennifer found that the new technique felt more natural, and improved her serve.

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 31

In terms of neural plasticity, learning the new serving technique involved

A. long-term potentiation alone.
B. long-term depression alone.
C. long-term potentiation and long-term depression.
D. developmental plasticity.

C *In this example, long-term potentiation would be working to strengthen the neural pathways involved in the new serving technique, and long-term depression would be involved in weakening the neural connections involved in the old serving technique. Long-term potentiation and depression are both forms of adaptive neural plasticity.*

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 32

In which part of Jennifer's brain is the memory of the new serving technique likely to be stored?

A. amygdala
B. cerebellum
C. hippocampus
D. substantia nigra

B *The memory of the new serving technique is an implicit procedural memory and is therefore likely to be stored in the cerebellum.*

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 33

After learning the new tennis serving technique, Jennifer plays a game of badminton. She instinctively uses her new tennis serving technique when serving in badminton. This is an example of

A. stimulus generalisation.
B. stimulus discrimination.
C. positive reinforcement.
D. negative reinforcement.

A *In this situation, Jennifer has (inappropriately) generalised the antecedent of playing tennis to the antecedent of playing badminton. As a consequence, she has applied the same behaviour in anticipation of positive reinforcement.*

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 34

Jennifer has a very poor service game in badminton, as the tennis serving technique is not appropriate for badminton. After two service games, she stops using the new technique for badminton, yet she continues to use the new technique the next time she plays tennis. This is an example of

A. extinction.
B. negative reinforcement.
C. stimulus discrimination.
D. stimulus generalisation.

C This is an example of stimulus discrimination as Jennifer only displays the behaviour of the new service technique in the presence of the antecedent of playing tennis, not in the presence of the antecedent of playing badminton.

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 35

Sensory memory is unique from all other types of memory in that it

A. has an unlimited capacity.
B. is able to retain past experience more accurately than any other memory store.
C. contains memory of sensations.
D. has a limited duration.

B Sensory memory contains exact replicas of sensory experience and therefore contains the most accurate retention of past events. Short-term and long-term memory only contain the information that has been attended to from the sensory store, and are therefore less accurate in their representation of past experience. Regarding the other options, long-term memory also has a (potentially) unlimited capacity; both short-term and long-term memory can hold memories of sensory experience, and short-term memory also has a limited duration.

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 36

When glutamate is received by a complementary-shaped receptor site,

A. the presynaptic neuron is more likely to generate an action potential.
B. the presynaptic neuron is less likely to generate an action potential.
C. the postsynaptic neuron is more likely to generate an action potential.
D. the postsynaptic neuron is less likely to generate an action potential.

C Glutamate is the brain's primary excitatory neurotransmitter. When it is received by a postsynaptic neuron's receptor sites, it makes that neuron more likely to generate an action potential.

Use the following information to answer Questions 37 and 38.

Hannah is a 49-year-old woman who has a son named Thomas who is 16, and a mother named Miranda who is 75.

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 37

Which of the following would be a typical average number of hours spent sleeping each night, for each person, for their age?

	Hannah	Thomas	Miranda
A.	7.7	6.5	8.8
B.	6.8	10	11.2
C.	8.9	6.5	9.1
D.	7.8	8.9	6.5

D *A middle-aged adult such as Hannah typically sleeps for 7-8 hours per night. A teenager such as Thomas typically sleeps for 8-10 hours per night (ideally closer to 9-10hrs). An elderly person, such as Miranda, tends to have more disrupted sleep periods, and sleep for less time than a younger adult.*

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 38

Of these three people, which person will have the greatest amount of NREM sleep per night?

A. Hannah
B. Thomas
C. Miranda
D. they will all have the same amount of NREM sleep per night

B *Thomas will have the longest sleep in total and a slightly higher proportion of his sleep will be dedicated to NREM, compared to that of an adult and elderly person's sleep pattern.*

theories of the purpose and function of sleep (REM and NREM) including restoration theory and evolutionary (circadian) theory

Question 39

What is a key function of NREM sleep?

A. to enhance memory consolidation
B. to rest and restore the body
C. to improve mood and concentration
D. to generate vivid dreams

B *The key function of NREM sleep is the rest and recovery of the body. The other functions listed in this question are characteristics of REM sleep.*

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

Which of the following is an example of a circadian rhythm?

A. the sleep cycle
B. the REM sleep cycle
C. the NREM sleep cycle
D. the sleep-wake cycle

D *The sleep-wake cycle is a biological cycle of approximately 24 hours, and therefore, a circadian rhythm.*

Use the following information to answer Questions 41 and 42.

Jeremy mentors a primary school student as part of a community service project at his school. The student he mentors, Lydia, is 5-years-old. Jeremy needs participants for a research assignment he is completing on Developmental Psychology. He only requires one participant for his research, as his intention is to determine whether Lydia has met typical developmental hurdles for her age.

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 41

Jeremy explains the assignment to Lydia, lets her know that if she chooses to participate, that she is free to leave the study at any time, and that all of Lydia's data would be kept secure and confidential. He then invites Lydia to do the experiment. Which ethical guideline has Jeremy violated?

A. confidentiality
B. withdrawal rights
C. deception in research
D. informed consent

D Informed consent is violated because Lydia is 5-years-old and therefore under the legal age limit required to give informed consent (18 years of age). Her parent or guardian must sign a document indicating their consent for her to participate.

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 42

Which of the following best describes the type of research investigation Jeremy is conducting?

A. experiment
B. case study
C. cross-sectional study
D. counterbalanced experiment

B As this research investigation involves the study of a single individual and does not have a control condition, it is best described as a case study.

Use the following information to answer Questions 43-48.

Rose is a 27-year-old woman who suffers from a severe specific phobia of moths, but is otherwise a mentally and physically healthy individual.

the distinctions between stress, phobia and anxiety; variation for individuals with stress, phobia and anxiety on a mental health continuum

Question 43

It could be expected that Rose

A. feels anxious in social situations.
B. feels anxious when she thinks about going into a room that may have a moth in it.
C. frequently feels depressed.
D. feels anxious when in the presence of all flying insects.

B *Rose is likely to experience an increase in anxiety when she anticipates an encounter with her phobic stimulus, moths. She does not experience social anxiety (option A), or a mood disorder (option C). She does not feel anxious in the presence of all flying insects as her phobic stimulus is restricted to moths.*

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 44

When Rose avoids moths, she does not experience her phobic response. This leads to the

A. perpetuation of her phobia through negative reinforcement.
B. extinction of her phobia through non-reinforcement.
C. perpetuation of her phobia through punishment.
D. extinction of her phobia through response cost.

A *Rose's phobia of moths is perpetuated when she avoids encountering the moth. The behaviour of avoidance is negatively reinforced by the removal of her expected phobic response.*

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 45

Even though Rose's phobia interferes significantly with her day-to-day life, Rose knows that most people do not feel afraid of moths, and feels ashamed of her phobic response. She is worried about how her friends might judge her if they knew she was seeking help for her fear of moths. Rose's likelihood of seeking help for her phobia is affected by

A. classical conditioning.
B. social anxiety.
C. stigma.
D. the role of her stress response.

C In this situation, Rose's help-seeking behaviour is negatively affected by her perception of the social stigma associated with her phobia.

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] agonists) 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 46

Rose is invited for a weekend away in the country with some friends. She wants to travel with her friends, but is afraid that she will encounter moths on the trip. Rose decides to see her doctor to see if she can have medication prescribed that might help her to deal with the anxiety she experiences when confronted with situations that may involve an encounter with moths. After meeting with Rose, the doctor discourages her from taking medication for her phobia because benzodiazepines

A. can be addictive.
B. do not deal with the cause of the anxiety.
C. can have unwanted side-effects.
D. all of the above.

D Although effective in the short-term, anti-anxiety medication such as benzodiazepines have a range of drawbacks, including those listed in options A, B and C.

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] agonists) 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 47

Rose's doctor recommends that instead of medication, she uses other biological techniques to help minimise her phobic response. One other biological technique that Rose's doctor may recommend to help manage her phobia may be

A. short-acting GABA agonists.
B. breathing retraining.
C. non-fear modelling.
D. talk-based therapy.

B Breathing retraining is a biological intervention to help manage phobia. The doctor has already rejected the use of short-acting GABA agonists (benzodiazepines), as these are a form of medication. Non-fear modelling and talking therapy are not appropriate answers for this question, as they are not biological techniques.

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] agonists) 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 48

Rose's doctor also suggests that she ask her friends to visit a website that provides information for family, friends and supporters of individuals who have phobias. Two useful pieces of advice that the website may suggest could be to

A. remind Rose that her phobia is a weird reaction to have to moths.
B. force Rose to encounter a moth.
C. gently challenge Rose's unrealistic thoughts and discourage her avoidance of moths.
D. tell Rose that she should not come to the weekend away because there will probably be moths at the country house.

C Psychoeducation for family, friends and supporters of people who have phobias typically includes the advice to gently challenge unrealistic thoughts and discourage her avoidance of moths. Note that option A is inappropriate as it may increase Rose's sense of social stigma about her phobia, option B is inappropriate as it could create a severe stress response from Rose and worsen her experience of the phobia, and option D is inappropriate because it encourages her avoidance behaviours.

Use the following information to answer Questions 49 and 50.

A researcher is considering the following data set representing the number of hours per week that twenty people (ten in each group) spend doing aerobic exercise.

Control Group	Experimental Group
6	10
7	9
5	6
1	11
6	7
5	8
6	7
6	8
7	5
6	9

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 49

Which descriptive statistic would provide the most valid representation of a measure of central tendency for the data from the control group and the data from the experimental group?

A. the mean
B. the mode
C. the median
D. the standard deviation

C The median would provide the most valid representation of central tendency for this data set as the outlier (one hour) would bias the mean in a negative direction.

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 50

Which of the following could be considered a valid conclusion from this data?

A. the experimental group always completes more aerobic exercise per week than the control group
B. the control group always completes more aerobic exercise per week than the experimental group
C. this data does not provide clear evidence that the experimental group completes less exercise per week than the control group
D. this data cannot be considered valid

C There are occasions when members of the control group complete more aerobic exercise per week than the experimental group; this is evident in the cases of the participants from the experimental group who exercised for 5 or 6 hours per week, which is less than the participants from the control group who exercised 7 hours per week. Note that there is no information provided to suggest that the data is not a valid representation of the property that it is measuring (amount of time spent doing aerobic exercise per week).

Section B

VCAA Key Knowledge	Question	Answer guide

Kieran has just moved into a new house with carpeted floors in the living room, and wooden floors in the kitchen. When Kieran walks over his carpeted living room floor to open the door to his bedroom, he receives an electric shock (from static electricity) as soon as he touches the metal door handle. His hand immediately flinches away from the handle and he then realises he is in pain. This happens to Kieran every time he goes to open his bedroom door. After a week of living at the house, he finds himself flinching whenever he goes to open any door in his house, even the pantry door in his kitchen, where no static electricity is generated from walking across the floor.

the distinction between conscious and unconscious responses by the nervous system to sensory stimuli, including the role of the spinal reflex	**Question 1a** (2 marks) Explain why Kieran's behaviour of flinching the first time he touches the metal door handle can be described as an unconscious response.	**Answer:** • *When Kieran receives an electric shock, it generates a spinal reflex that leads to the immediate withdrawal of his hand from the metal door handle.* • *The spinal reflex is a simple behaviour initiated by the spinal cord and does not require conscious processing.* **Marking protocol:** One mark for each of the above points.

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	**Question 1b** (6 marks) Using the language of classical conditioning, explain how Kieran learned to flinch when he touches the door handle. In addition, explain why Kieran has also begun to flinch when he goes to adjust any of the door handles of his house, including his kitchen.	**Answer:** • *Before conditioning, touching the door handle was a neutral stimulus in that it generated no flinching response.* • *During conditioning, whenever he touched the door handle, he immediately received an electric shock. The electric shock was the unconditioned stimulus that automatically generated the unconditioned response of flinching.* • *After conditioning, touching the door handle was the conditioned stimulus and flinching to the door handle alone was the conditioned response.* • *The acquisition of this conditioned response required repeated presentation of the neutral stimulus (touching the door handle) and the unconditioned stimulus (electric shock).* • *Kieran then demonstrates stimulus generalisation when he produces the conditioned response of flinching to other door handles in his house, such as the pantry door in his kitchen.* **Marking protocol:** One mark for each correct identification of the UCS, UCR, NS/CS, and CR. One mark for explaining the process of classical conditioning in Kieran's case (i.e. the repeated presentation of touching door handle which immediately preceded the electric shock). One mark for applying stimulus generalisation to Kieran's case.

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	**Question 1c** (2 marks) Provide two reasons why Kieran's learned behaviour of flinching is best explained by classical conditioning.	**Answer:** • *Kieran's response is involuntary/reflexive, which is the type of response conditioned through classical conditioning.* • *Kieran is passive in the acquisition process, which is characteristic of classical conditioning.* • *The consequences of Kieran's flinching behaviour are unimportant to his acquisition of the learning (unlike in operant conditioning), which is characteristic of classical conditioning.* • *The order of presentation of stimuli and response in the acquisition phase is firstly the neutral stimulus, then the unconditioned stimulus and then the response. There is no stimulus that is provided after the response (unlike in operant conditioning), which is characteristic of classical conditioning.* **Marking protocol:** One mark for any of the above points, to a maximum of two.

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 1d** (2 marks) Describe the role of glutamate in the synaptic plasticity required for Kieran to learn in this scenario.	**Answer:** • *Glutamate is the brain's primary excitatory neurotransmitter and is essential for the long-term potentiation of synaptic connections.* • *The repeated coactivation of Kieran's neural pathways/synaptic connections responsible for touching the door handle and the neural pathways/synaptic connections responsible for the perception of the pain of the electric shock has led to the greater production, release and reception of the neurotransmitter glutamate.* **Marking protocol:** One mark for each of the above points.

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	**Question 1e** (2 marks) Kieran goes on an overseas holiday for two weeks and does not display the flinching response while opening any doors in the hotel rooms he stays in. However, when he returns to his house, he suddenly starts flinching again when he goes to open his bedroom door. Has Kieran experienced spontaneous recovery of the learned behaviour? Justify your answer.	**Answer:** • *Kieran has not experienced spontaneous recovery of the conditioned response.* • *It is likely that his lack of flinching when overseas was due to stimulus discrimination and not extinction of the conditioned response. Spontaneous recovery only occurs after extinction of the conditioned response.* **Marking protocol:** One mark for each of the above points.

Dr Rinehart is conducting a series of experiments on memory. He asks for volunteers from the university by posting an advertisement on the university website, and selects the first 40 respondents to be participants in his experiment.

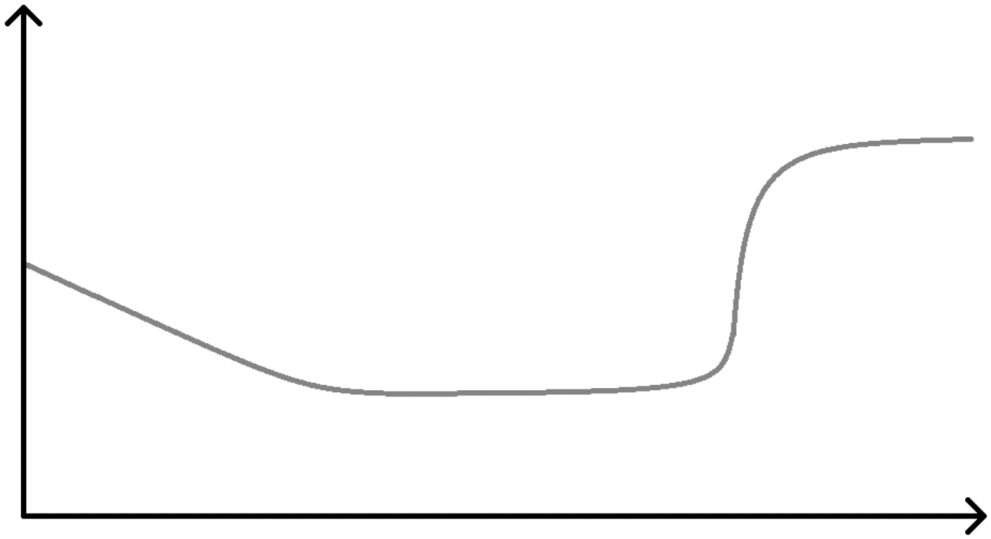
In the first condition of his research, he presents each participant with 30 random words simultaneously (i.e., all 30 words on a single slide of a PowerPoint presentation) for 20 seconds, and then asks them to write down as many words as they can remember, in any order, on a blank piece of paper.

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 2a** (1 mark) In this research, what sampling procedure did Dr Rinehart use?	**Answer:** • *Convenience sampling.* **Marking protocol:** One mark for the above point.

methods to retrieve information from memory or demonstrate the existence of information in memory, including recall, recognition, relearning and reconstruction	**Question 2b** (1 mark) In this procedure, what method of retrieval is used by the participants?	**Answer:** • *(Free) recall is used by the participants in this experiment.* **Marking protocol:** One mark for the above point.

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 2c** (2 marks) On average, how many of the 30 words would you expect participants to be able to reproduce, and why?	**Answer:** • *It would be expected that participants could recall seven of the words on average.* • *This is because the capacity of short-term memory is approximately seven (plus or minus two) items.* **Marking protocol:** One mark for each of the above points. Note: An answer of any number of words recalled above 9 is also acceptable, as it is possible that in addition to the 7±2 bits of information that can be held in short-term memory, that some words are rehearsed and transferred to long-term memory prior to recall. (It is very unlikely that more than 20 words would be recalled after this timespan.) If an answer higher than 9 is given, the justification for this answer must reference the transfer of information to long-term memory.

In the second condition, Dr Rinehart presented participants with a different set of 30 random words, sequentially (with each word presented on a separate slide of a PowerPoint presentation). Each word was shown to participants for one second before the presentation of the next word. After the final word was presented, participants were instructed to write down as many words as they could remember, in any order. The following graph represents the average memory of each of the words from Dr Rinehart's participants.



Source: https://upload.wikimedia.org/wikipedia/commons/1/1d/Effet_de_position_s%C3%A9rielle.png

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 2d** (2 marks) How should Dr Rinehart label the x and y axis for this graph?	**Answer:** • *Dr Rinehart should label the x axis as "word order of presentation".* • *Dr Rinehart should label the y axis as "frequency of recall".* **Marking protocol:** One mark for each of the above points.

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 2e** (3 marks) With reference to the multi-store model of memory, explain the likely reason why Dr Rinehart has obtained these results for this experiment.	**Answer:** • *The superior recall for words presented at the start of the list (when compared to the middle of the list) is likely to have occurred because these words have been presented with sufficient time to be rehearsed and transferred to long-term memory.* • *The superior recall for words presented at the end of this list (when compared to the middle of the list) is likely to have occurred because these words remain within the participants' short-term memory at the time of recall.* • *The relatively poor recall of words presented in the middle of the list is likely to have occurred because these words have been presented too soon to remain in short-term memory at the time of recall, and too late to allow time to be rehearsed and transferred into long-term memory.* **Marking protocol:** One mark for each of the above points.

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 2f** (3 marks) How might the shape of the graph of results be likely to change if Dr Rinehart had asked his participants to count backwards from 100 to zero, before asking them to write down as many words as they could remember, in any order? Justify your answer.	**Answer:** • *It is likely that after delaying participant recall with the distractor task (of counting backwards from 100), the graph would indicate a lower average recall of the words presented at the end of the list (i.e., a diminished recency effect).* OR • *It is likely the instead of a U shape, the shape of the graph would be an L.* • *This is because the distractor task would prevent the information from being rehearsed…* • *…and the amount of time taken to recite the numbers from 100 to zero would exceed the duration of short-term memory.* OR • *This is because the distractor task would displace the words from the 7 (±2) bits that can be held in short-term memory…* • *…and this would lead to the words being lost from memory.* **Marking protocol:** One mark for either of the first two points, and one mark for each of either of the subsequent pairs of points.

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 2g** (2 marks) How might the shape of the graph of results be likely to change if Dr Rinehart had used the names of the participants' family members and friends, instead of random words? Justify your answer.	**Answer:** • *The graph may be likely to show that the total amount of words recalled would be higher.* OR • *The shape of the graph may have less of a dip in the middle (i.e., there may be better recall of the items from the middle of the list).* • *This is because the names of family and friends would be more meaningful to the participants, and this would enhance their ability to elaboratively rehearse the information, leading to better recall of the information.* **Marking protocol:** One mark for any of the first two points, and one mark for the last point.

Luke is concerned about his friend Sue. Sue sent Luke a message saying that she had found it difficult to sleep for about a month because she was feeling very anxious. In her message, Sue commented that she "just lay awake every night thinking about all this stressful stuff over and over again". She also commented that she had "tried to ignore the anxiety" and keep living her life as she normally had, but she had recognised that this was not working, and she needed to "do something about the issue".

Luke sent her a message back and asked her what the source of her anxiety was. Sue replied "everything". She added that she had stopped going to school because she was finding it too distressing to be in that environment. Luke then gave Sue a call and listened to her talk more about her struggle with anxiety. Sue said that the conversation helped her a lot. As a part of their conversation, Luke suggested that Sue speak to her doctor about her issues.

Sue listened to Luke's advice and went to see her doctor about her experiences with anxiety.

context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress.	**Question 3ai** (3 marks) Sue's coping strategy changes after her conversation with Luke. What does this indicate about the relationship between coping flexibility and context-specific effectiveness?	**Answer:** • *Prior to the phone conversation, Sue's strategy was avoidance (by ignoring the anxiety and trying to keep living life as she had). However, Sue demonstrated coping flexibility when she recognised that this was an ineffective coping strategy and switched to using an approach strategy of talking to Luke.* • *Talking to Luke is a much more effective strategy than avoidance for Sue in this specific context.* • *This indicates that coping flexibility makes it easier to achieve higher levels of context-specific effectiveness.* **Marking protocol:** One mark for each of the above points.

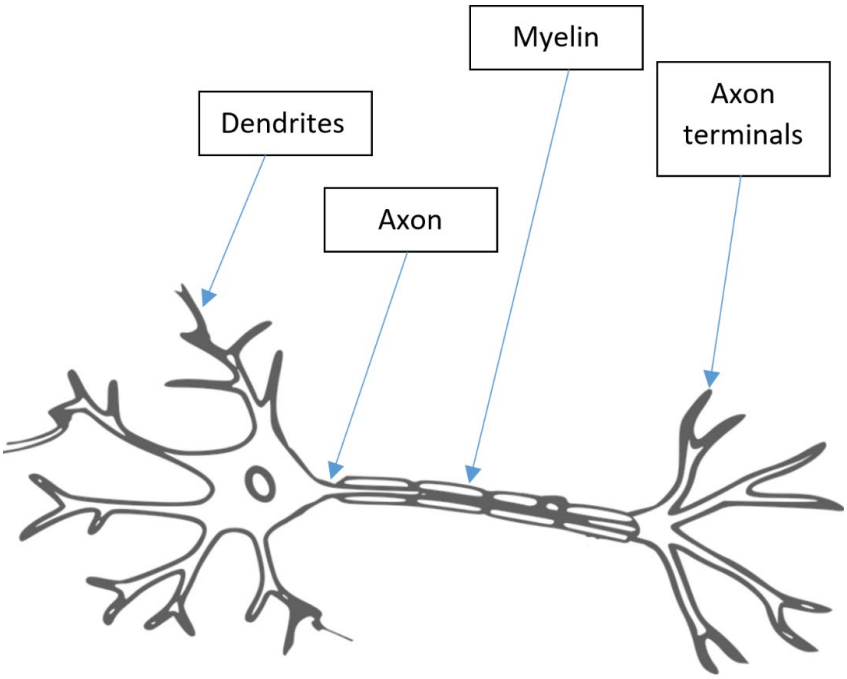
resilience as a positive adaption to adversity including the relative influence of protective factors with reference to: adequate diet and sleep (biological); cognitive behavioural strategies (psychological); support from family, friends and community (social)	**Question 3aii** (2 marks) How might this conversation build Sue's resilience?	**Answer:** • *Luke provides social support to Sue.* • *The support provided by Luke helps to grow Sue's potential for positive adaption to adversity by helping her to process her emotions and encouraging her to seek help from her doctor.* **Marking protocol:** One mark for each of the above points.

mental health as a continuum (mentally healthy, mental health problems, mental disorders) influenced by internal and external factors that can fluctuate over time	**Question 3b** (2 marks) What are two factors that Sue's doctor would consider when determining where Sue was placed on the mental health continuum?	**Answer:** • *The severity of Sue's experiences of anxiety (i.e., the degree of dysfunction/distress/deviance that Sue may be experiencing).* • *The duration of Sue's experiences of anxiety.* **Marking protocol:** One mark for each of the above points.

Sue's doctor recommends that Sue considers joining a single blind drug trial on a new form of benzodiazepine.

ethical implications in the study of, and research into, mental health, including informed consent and use of placebo treatments.	**Question 3c** (2 marks) What risks are involved with participation in this sort of experiment?	**Answer:** • *Sue may be placed in the experimental group and may experience unpleasant side-effects due to the medication (or the effect of the medication may have a detrimental/negligible effect on her experience of anxiety), or…* • *…Sue may be placed in the placebo group and receive no active treatment for her experience of anxiety (which may perpetuate her condition).* **Marking protocol:** One mark for each of the above points.

ethical implications in the study of, and research into, mental health, including informed consent and use of placebo treatments.	**Question 3d** (2 marks) What factors would the researchers need to consider to ensure that they had upheld the ethical consideration of informed consent in this kind of experiment?	**Answer:** • *The age of participants (if participants are under 18, consent must be given from their parent or primary caregiver).* • *Whether or not potential participants are of sound mind to give consent.* • *Whether they had adequately explained the rights of participants, and the nature of the experiment, including the procedure and risks involved, to potential participants prior to inviting them to sign a form indicating their willingness to participate in the study.* **Marking protocol:** One mark for any of the above points, to a maximum of two.

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 4a** (4 marks) On the following diagram, clearly label the dendrites, axon, myelin, and axon terminals.  Source: Source: https://commons.wikimedia.org/wiki/File:Sketch_of_a_brain_neuron.png	**Answer:**  **Marking protocol:** One mark for each part correctly labelled.

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 4b** (2 marks) Describe two roles of myelin.	**Answer:** • *Myelin helps to insulate and protect the axon.* • *Myelin helps to speed up the transmission of an action potential down the axon.* **Marking protocol:** One mark for each of the above points.

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 4c** (2 marks) What changes to a neuron is expected after long-term depression has occurred?	**Answer:** • *The neuron may prune back (have fewer) dendritic spines.* • *The neuron may prune back (have fewer) receptor sites.* • *The neuron may prune back (have fewer) axon terminals.* • *The neuron may produce and release less neurotransmitter.* **Marking protocol:** One mark for any of the above points, to a maximum of two.

José is a politician who is finds it difficult to sleep at the right times due to frequent international travel, particularly when he travels eastwards from Melbourne to Los Angeles. This greatly affects his ability to stay awake and alert during important meetings.

changes to a person's sleep-wake cycle and susceptibility to experiencing a circadian phase disorder, including sleep-wake shifts in adolescence, shift work and jet lag	**Question 5a** (1 mark) Name the circadian phase disorder José is most likely experiencing.	**Answer:** • *Jet lag.* **Marking protocol:** One mark for the above point.

the interventions to treat sleep disorders including cognitive behavioural therapy (with reference to insomnia) and bright light therapy (with reference to circadian phase disorders)	**Question 5b** (4 marks) Explain how bright light therapy could assist José in synchronising his circadian rhythm to match the destination time zone prior to his departure.	**Answer:** • *Bright light therapy (BLT) involves the appropriate timing of exposure to very bright light (stronger than normal indoor ambient light), with the aim to shift the circadian rhythm/influence the release of melatonin.* • *Prior to his departure, José should begin to gradually shift his sleep-wake cycle to match the destination time zone. For example, this might mean trying to sleep an hour earlier, and wake up an hour earlier, for a few days prior to travelling to Los Angeles.* • *José should use BLT as soon as he wakes up, (to attempt to offset the release of melatonin) to encourage wakefulness. (This should also lead to José feeling sleepier earlier in the day.)* • *José should also ensure that light is kept to a minimum as he attempts to sleep earlier, (to assist with the release of melatonin) to encourage the onset of sleep.* **Marking protocol:** One mark for each of the above points.

Isabella is conducting research into the effect of altered states of consciousness on memory. She shows 50 volunteers from her university a five minute film of an argument between two neighbours, then asks them to write down as much information about the argument that they can remember, while they are sober. She then asks her participants to drink alcohol until they feel "drunk". Once participants say that they feel drunk, she then instructs them to write down as much information as they can remember about the argument whilst in this altered state of consciousness.

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 6a** (1 mark) What sort of data is Isabella collecting for her research?	**Answer:** • *This research collects qualitative (non-numerical) data (through a self-report).* **Marking protocol:** One mark for the above point.

determine aims, research hypotheses, questions and predictions that can be tested	**Question 6b** (3 marks) Write a possible hypothesis for Isabella's research.	**Answer:** • *It was hypothesised that people would recall information less accurately (or recall less information) when drunk compared to when they were in normal waking consciousness.* **Marking protocol:** One mark for correct reference to the IV (whether participants were drunk or in normal waking consciousness). One mark for correct reference to the DV (memory). One mark for making an appropriate statement of the direction of the predicted effect of the IV on the DV. Note: no marks will be awarded if the hypothesis is phrased as a question.

identify, describe and explain the limitations of conclusions, including identification of further evidence required	**Question 6c** (4 marks) Does Isabella's research methodology allow her to make a valid conclusion about the effect of altered states of consciousness on memory? Provide reasons for your answer.	**Answer:** ● *Isabella's research methodology is unlikely to produce results that would allow a valid conclusion to be made about the effect of altered states of consciousness on memory.* ● *This is because:* ○ *She has not operationalised and standardised drunkenness (i.e., different participants may have been at different levels of alcohol intoxication at the time they recall the information).* ○ *She has not operationalised and standardised her measure of "memory" (i.e., participants may write varying levels of detail about the memories they formed when drunk or sober).* ○ *She has used a self-report data collection method, which is prone to biases (such as social desirability bias).* ○ *There is an order effect (a confounding variable) given that participants are asked about their memory of the argument during normal waking consciousness, before being asked about their memory of the argument when drunk.* ○ *The data is qualitative, and therefore potentially difficult to interpret or summarise, possibly increasing the chances of an experimenter effect confounding the results.* ○ *She has only studied one altered state of consciousness (alcohol intoxication); other altered states of consciousness may affect memory in different ways to alcohol intoxication.* ○ *Her sample size is too small to make a valid generalisation.* ○ *Her sample has been gathered through convenience sampling and is unlikely to represent the common experience of the broader population.* **Marking protocol:** One mark for the first point. Three additional marks for any three of the following points, or any other reasonable criticism of the validity of the experiment.

Natasha has recently had a medical appointment because she has been experiencing mild headaches, stomach cramps and fatigue. Her doctor suggests that her symptoms may be partially caused by stress, and recommends that Natasha take steps to reduce the amount of stress that she has to deal with. Natasha has a relatively normal day-to-day life, but recently accepted a big promotion at the company that she works for. Ever since then, she has found herself working longer hours and having less time to relax. She is also solely responsible for looking after two primary-school-aged children and finds that her kids are both a source of joy and stress.

After the appointment with her doctor, Natasha talks to her boss about trying to cut down on some of her responsibilities at work, but her boss tells her that most of her peers can handle the stress of the job easily, and have been doing so for years. He suggests that Natasha will have to learn to cope with the demands of the role.

sources of stress (eustress and distress) including daily pressures, life events, acculturative stress, major stress and catastrophes that disrupt whole communities *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* *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 7** (10 marks) How would you categorise the sources of Natasha's stress? Drawing on your understanding of biological and psychological models of stress, explain why Natasha might be experiencing these physiological symptoms of stress, and why she might be feeling more stressed than other people at her work.	**Sample answer:** *Natasha is experiencing distress, given that the experience of her stress is unpleasant, and has a detrimental effect on her life. The source of her stress seems to be a combination of the life event of the promotion at her work, and the daily pressures that she encounters in raising two primary-school-aged children.* *Life events are a source of stress that involve significant events that demand significant changes in behaviour over a relatively short period of time. The promotion has caused a sudden increase in stress given the challenging increase in workload and the way that this impacts her behavioural responses.* *Daily pressures are stressors that cause relatively small adjustments in behaviour but are experienced frequently. Given her recent promotion, Natasha has less time to relax and recover from the daily pressures that she encounters. These stressors will have a cumulative effect, compounding Natasha's experience of stress.* *Natasha has been experiencing physiological symptoms commonly associated with chronic and acute stress, such as mild headaches, stomach cramps and fatigue. Her experience of these symptoms can be understood in terms of the General Adaptation Syndrome, which is a biological model of stress.* *When Natasha first encountered the stressor of the new promotion (and the associated workload) she would have entered the Alarm Reaction stage. Here, she would have first experienced the substage of Shock where her resistance to the stressor would have fallen beneath her normal level, and then Countershock, when her fight or flight response would have activated and her body's resistance to the stressor began to recover.* *From here, she would have entered stage two of the General Adaptation Syndrome; Resistance. In Resistance, her ability to deal with the stressor would have increased above her normal baseline level, as stress hormones such as cortisol are released in greater quantities into her bloodstream. Nevertheless, the prolonged increased stress*

response led to wear and tear on her body and supressed the activity of her immune system. Consequently, she has begun to experience physiological symptoms commonly associated with stress responses, such as mild headaches, stomach cramps, and fatigue. These physiological symptoms can be considered psychosomatic expressions of her experience of stress.

Although it appears that her resistance to stress is waning, it is unlikely that she has reached stage three, the Exhaustion stage, of the General Adaptation Syndrome, as her symptoms do not appear to be particularly severe or prolonged.

Natasha's psychological experience of stress can be understood in terms of the Transactional Model of Stress and Coping. Lazarus and Folkman highlight in their theory that the psychological experience of stress is subjective, and is the result of two appraisals that represent a transaction between the individual and their environment.

In this situation, Natasha's primary appraisal would have been that the situation of the promotion was relevant and stressful, and that it presented her with a threat of not being able to meet the demands of the role. She may have also felt stress related to the way that the new role would challenge her and help her to develop in her career.

The degree of stress that she experienced would then be moderated by her secondary appraisal; her judgment of her ability to cope with the stressor. In this case, it is clear that Natasha appraised both her emotion-focused and problem-focused coping strategies as insufficient to deal with the severity of the stressor that she had encountered, and consequently, she experienced a significant amount of stress. It is also possible that she feels like her coping mechanisms are compromised by the demands of childrearing, as this prevents her from recovering from the stress of the work associated with her promotion.

The Transactional Model of Stress and Coping helps to explain why Natasha may be experiencing more stress than her counterparts at work. Her primary appraisal of the degree of stress that that the promotion represents may be higher or different to her colleagues. Some of her colleagues may feel that the role is actually a positive stimulus and not a stressor. Additionally, Natasha may have appraised her coping resources as less effective with dealing with the stress of the role than her colleagues, some of whom have been doing the role for years and have likely developed appropriate coping strategies for dealing with the nature of the job.

Marking protocol:

This answer is globally marked (i.e. an overall mark is awarded for the entire answer). The following criteria could be used to assess a response:

9-10 Outstanding	• All elements of the question addressed. • A thorough explanation of the sources of distress that Natasha is experiencing. • An insightful application of a biological model of stress (General Adaptation Syndrome) to the explanation of Natasha's stress related physical symptoms. • An insightful application of a psychological model of stress (Lazarus and Susan Folkman's Transactional Model of Stress and Coping) to the explanation of Natasha's psychological experience of stress. • A justification of why Natasha may be experiencing greater stress in her role than her colleagues based on the Transactional Model of Stress and Coping. • Formal and appropriate psychological terminology is used throughout the response. Terms that could be used include key terms related to sources of stress such as: distress, daily pressures, life event; key terms related models of stress as a biological process such as: General Adaptation Syndrome, Stage 1: Alarm Reaction, Shock, Countershock, Stage 2: Resistance, Stage 3: Exhaustion, fight-fight-(freeze), cortisol, immune system, psychosomatic; key terms related to models of stress as a psychological process such as: Richard Lazarus and Susan Folkman's Transactional Model of Stress and Coping, stages of primary and secondary appraisal, stressful, benign/positive, irrelevant, threat, harm/loss, challenge, emotion focused coping, problem focused coping, subjective.
7-8 High	• All elements of the question addressed. • A detailed explanation of the sources of distress that Natasha is experiencing. • A clear application of a biological model of stress (General Adaptation Syndrome) to the explanation of Natasha's stress related physical symptoms. • A clear application of a psychological model of stress (Lazarus and Susan Folkman's Transactional Model of Stress and Coping) to the explanation of Natasha's psychological experience of stress. • A justification of why Natasha may be experiencing greater stress in her role than her colleagues based on the Transactional Model of Stress and Coping. • Formal and appropriate psychological terminology is used throughout the response.
5-6 Medium	• All elements of the question addressed. • A satisfactory explanation of the sources of distress that Natasha is experiencing. • A satisfactory application of a biological model of stress (General Adaptation Syndrome) to the

		explanation of Natasha's stress related physical symptoms. • A satisfactory application of a psychological model of stress (Lazarus and Susan Folkman's Transactional Model of Stress and Coping) to the explanation of Natasha's psychological experience of stress. • A justification of why Natasha may be experiencing greater stress in her role than her colleagues. • Formal and appropriate psychological terminology is used throughout the response.
	3-4 low	• Not all elements of the question addressed or addressed correctly. • A superficial explanation of the sources of distress that Natasha is experiencing. • A poor application of a biological model of stress (General Adaptation Syndrome) to the explanation of Natasha's stress related physical symptoms. • And/or a poor application of a psychological model of stress (Lazarus and Susan Folkman's Transactional Model of Stress and Coping) to the explanation of Natasha's psychological experience of stress. • A poor explanation (or no attempt at an explanation) as to why Natasha may be experiencing greater stress in her role than her colleagues. • Minimal formal and appropriate psychological terminology is used throughout the response. • Minimal links made between psychological theory and the scenario.
	1-2 Very low	• A superficial attempt at the question. • Incomplete or inaccurate explanation of the sources of distress that Natasha is experiencing. • The biological model of stress (General Adaptation Syndrome) is inaccurately explained and/or inappropriately applied to the scenario (or not attempted). • The psychological model of stress (Lazarus and Susan Folkman's Transactional Model of Stress and Coping) is inaccurately explained and/or inappropriately applied to the scenario (or not attempted). • No explanation as to why Natasha may be experiencing greater stress in her role than her colleagues. • Little formal and appropriate psychological terminology is used throughout the response.
	0 marks Unsatisfactory	• The question has not been meaningfully attempted.

VCE PSYCHOLOGY

Written Examination

ANSWER SHEET – 2020

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					