SCIENCE TEACHERS ASSOCIATION VICTORIA 2023

TRIAL EXAMINATION

QUESTION AND ANSWER BOOK

Total writing time:
2 hours 30 minutes

PSYCHOLOGY
UNITS 3 & 4

Student name	

Student ID									**Letter**	

Structure of book

Section	Number of questions	Number of marks
A	40	40
B	7	80
	Total	**120**

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculators are allowed in this examination.

Materials supplied

- Question and answer book of 30 pages, with a detachable answer sheet for multiple-choice questions inside the front cover.

Instructions

- Detach the answer sheet for multiple-choice questions during reading time.
- Write your name and student ID in the space provided above on this page and on the answer sheet for multiple-choice questions.
- All written responses should be in English.

At the end of the examination

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

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2023

PSYCHOLOGY
Units 3 & 4 Trial Examination
MULTIPLE CHOICE ANSWER SHEET

STUDENT NAME:	

INSTRUCTIONS: **USE PENCIL ONLY**

- Write your name in the space provided above. Use a **PENCIL** for **ALL** entries.
- If you make a mistake, **ERASE** it – **DO NOT** cross it out.
- Marks will **NOT** be deducted for incorrect answers.
- **NO MARK** will be given if more than **ONE** answer is completed for any question.
- Mark your answer by **SHADING** the letter of your choice.

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

SECTION A: Multiple-choice questions

Instructions for Section A

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.
Choose the response that is **correct** or that **best answers** the question.
A correct answer scores 1; an incorrect answer scores 0.
Marks will **not** be deducted for incorrect answers.
No marks will be given if more than one answer is completed for any question.
Section A is worth 40 marks.

Question 1

The autonomic nervous system:

A. consists of all the nerves throughout the body that regulate internal functions vital for survival.

B. generally functions without conscious input and controls involuntary functions.

C. controls voluntary movements of smooth muscles and functions unconsciously.

D. comprises all nerves and neurons found in the brain and spinal cord.

Question 2

Which of the following correctly describes the effects of inhibitory neurotransmitters?

A. They involve the decreased likelihood of presynaptic neurons firing and include neurotransmitters such as GABA.

B. When they bind to a complimentary receptor, they increase the chance of the postsynaptic neuron performing its specific function.

C. They are released by neurons and have a slow but long-lasting effect on multiple postsynaptic neurons.

D. They suppress the activity of postsynaptic neurons, decreasing their likelihood of firing.

Question 3

Long-term depression results in structural synaptic changes. Which of the following correctly describes these changes?

A. The postsynaptic neuron becomes less responsive, as there are fewer receptor sites.

B. Dendrites experience increased growth and become bushier due to sprouting.

C. Due to pruning, there is an increased number of synaptic connections between neurons.

D. The postsynaptic neuron becomes faster at detecting signals, as pruning occurs and there are fewer dendritic spines.

Use the following information to answer Questions 4 – 6.

Louis, a 6-year-old boy, is excited about learning to ride a bike as he has imagined himself riding his bike up and down his street for some time. He eagerly approaches his new bike equipped with training wheels, and his supportive parents by his side. Louis carefully climbs onto the bike as he had seen his father do, gripping the handlebars tightly. With his parents' encouragement, he starts pedalling and gradually gains confidence in his ability to balance and steer. As he continues practising, Louis begins to feel more confident.

Question 4

Which stage of observational learning is Louis displaying when he carefully climbs onto the bike like he saw his father do?

A. Motivation, Louis can create a positive imagined future of himself riding the bike.

B. Attention, Louis looks up to his father and wants to be just like him.

C. Reproduction, Louis has the mental and physical ability to recreate the movement he saw his father do.

D. Reinforcement, Louis' parents encourage him, and he gains confidence to continue practising.

Question 5

Which of the following identifies the type of neuromodulator contributing to Louis learning to ride his bike, its level in the nervous system and its effect?

	Neuromodulator	Level in the nervous system	Effect
A.	dopamine	high	Aids in coordinating Louis' voluntary movements and has a role in the reward-based learning facilitated through Louis' parents' encouragement.
B.	glutamate	high	Stimulates the post synaptic neurons associated with bike riding to perform their function, contributing to long-term potentiation of the skill.
C.	serotonin	low	Increases Louis mood when riding his bike, making him more likely to repeat the behaviour.
D.	dopamine	low	When Louis receives encouragement from his parents, dopamine secretion is inhibited, which is associated with the experience of pleasure making him more likely to ride his bike again.

Question 6

To imagine himself riding a bike up and down his street, Louis relied on his:

A. Procedural and episodic memory, which respectively involved knowing the actions needed to ride a bike and remembering how he feels when he achieves something difficult.

B. Semantic memory, which involved recalling how a bike works and what the pedals are used for.

C. Semantic and episodic memory, which respectively involved how he had previously watched his dad ride a bike and that handlebars are for hands and the pedals are for feet.

D. Semantic and episodic memory, which respectively involved knowing that pushing the pedals down makes the wheels turn and the demonstration of how to ride the bike that his dad had given him.

Use the following information to answer Questions 7 & 8.

Natalie is preparing to travel overseas alone for the first time. The thought of navigating unfamiliar places, dealing with language barriers, and managing her finances is making her feel anxious. Natalie has been trying to put these feelings aside and focus on completing her final university assignment, however, she has recently realised that this is not effective in managing her feelings. Instead, Natalie decides to seek guidance from her cousin, Erika, who is an experienced traveller, and create a budget for herself. These two strategies help to alleviate her worries.

Question 7

Which stage and explanation of Lazarus and Folkman's Transactional Model of Stress and Coping does Natalie's decision to seek guidance from her cousin, Erika and create a budget align with?

A. Primary appraisal: Natalie evaluates the potential significance of her travel-related stressors.

B. Secondary appraisal: Natalie assesses her available resources and determines she has adequate resources to cope.

C. Primary appraisal: Natalie assesses her stressors as a significant challenge however determines she has adequate resources to cope.

D. Secondary appraisal: Natalie considers her upcoming trip as a potentially positive opportunity for growth, classifying it as a challenge.

Question 8

Natalie is demonstrating:

A. Coping flexibility as creating a budget directly deals with her financial-based stressor.

B. Context-specific effectiveness as she keeps changing her coping strategies.

C. Approach coping strategies as she changes her initial coping strategy of focusing on her university assignment.

D. Avoidant coping strategies when she tries to put her feelings of worry aside and focus on other things like her university assignment.

Use the following information to answer Questions 9 – 11.

Stephen is hiking in the woods, facing a challenging path. To assist himself, he reaches out and grabs hold of a nearby tree trunk for support. Unbeknownst to him, the trunk has a sharp twig growing from it. As soon as his hand makes contact with the sharp twig, he swiftly releases his grip on the trunk.

Question 9

What is the purpose of Stephen's swift response?

A. To allow for immediate conscious decision-making to avoid a potentially dangerous situation.

B. To minimise the damage to his hand, by triggering a quick unconscious response.

C. To ensure a coordinated and balanced movement of the entire body.

D. To provide feedback for the brain about the external environment.

Question 10

In Stephen's response, what is the main function of the motor neuron?

A. Transmit sensory information to his brain for processing.

B. Modulate the intensity of the reflex response.

C. Inhibit the sensory neuron's activity to prevent further pain in his hand.

D. Initiate muscle contraction to release the tree trunk.

Question 11

If Stephen were to recall his hiking experience later, which brain structure would be crucial for retrieving the memory and why?

A. Hippocampus, because it is involved in the retrieval of explicit memories and stored information from long-term memory.

B. Cerebellum, because it is involved in motor coordination and procedural memory.

C. Amygdala, because it is involved in storing the emotional components of all memories.

D. Basal Ganglia, because it is responsible for the formation of habits and procedural memories.

Use the following information to answer Questions 12 & 13.

Betty is preparing for her upcoming Science exam. She knows that she needs to study and retain a large amount of information, so she decides to use different techniques to enhance her memory. She decides to use both acrostics and the method of loci to remember the required content and scientific processes.

Question 12

According to the Atkinson-Shiffrin multi-store model of memory, when Betty retrieves information about the scientific process she has learnt using acrostics from long-term memory, it will be:

A. attended to and moved into sensory memory.

B. moved from long-term memory to sensory memory, via short-term memory.

C. moved from long-term memory to short-term memory.

D. stored in short-term memory for approximately 5-9 seconds.

Question 13

Which of the following best describes how the method of loci and acrostics could be used to help Betty prepare for her upcoming Science exam?

	Method of loci	Acrostics
A.	Will help Betty recall the content she has learnt in order if she physically walks a familiar route.	Recalls each of the scientific processes in the same location in which she learnt about the process.
B.	Associates' information about the scientific processes with a pronounceable word.	Associates' information about the process to a sentence in which the initial letter of each word serves as a cue for recall.
C.	Will be most effective if Betty creates a mental relationship between a well-known location and each component of the scientific process she has learnt.	Links information about a process to a memorable phrase where the first letter of each word acts as a retrieval cue.
D.	Uses vocal song and rhythm to associate the components that are needed to complete each scientific process.	Uses the first letter of each component in a particular reaction to create a poem to aid her recall.

Question 14

Every time he sits down to study, Bruce plays his favourite instrumental music in the background. After a few study sessions with the music playing, he starts to feel more focused and motivated as soon as he sits down to study. Bruce is learning through:

A. operant conditioning as the positive consequence of feeling motivated made him more likely to play the music again.

B. classical conditioning as the neutral stimulus of the music is associated with the unconditioned stimulus of studying.

C. operant conditioning as he actively turned the music on and voluntarily studied.

D. classical conditioning as he passively associates sitting down to study with the music which causes him to feel more focused and motivated.

Question 15

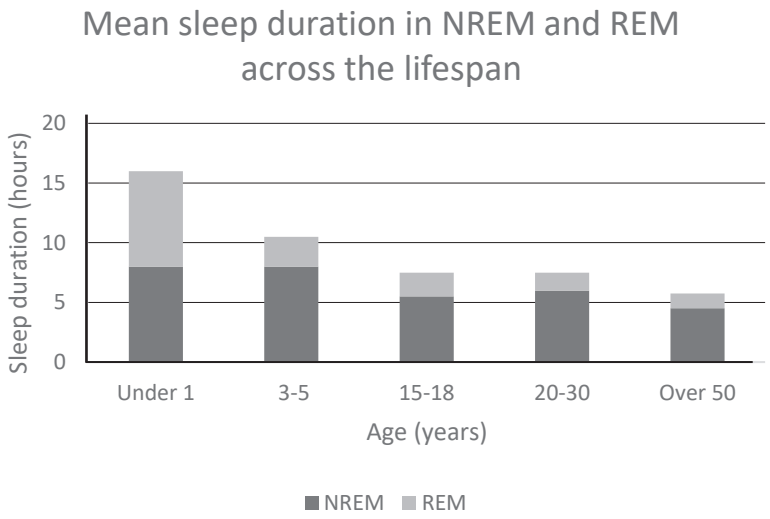
Which of the following options provides an accurate description of the cause of Alzheimer's disease?

	Amyloid plaques	Neurofibrillary tangles
A.	Can only be confirmed using brain imaging and post-mortem studies of the brain.	Proteins that build-up around a neuron and increase communication between neurons.
B.	Neurons are eventually killed due to a build-up of proteins inside the cell.	Communication between neurons is decreased because of protein build up around the synapse.
C.	Proteins that accumulate around the synapse and inhibit communication between neurons.	Proteins that form within neurons, which eventually kill the neuron.
D.	Cause memory loss.	Cause personality changes.

Use the following information to answer Questions 16 – 18.

Christine is a university professor studying the effects of age on sleep duration. She gathers data on both the amount of sleep and the proportion of NREM and REM sleep experienced by individuals across different age groups.

The graph below displays her results.



Question 16

Which of the following methods could Christine have used to generate the data displayed in the graph above about the hours spent in NREM and REM sleep?

A. Electroencephalograph, which indicates muscle movements in NREM and REM sleep.

B. Video monitoring, which provides data about periods of movement during sleep.

C. Electro-oculograph, which indicates dream-like brain activity.

D. Electroencephalograph, which provides distinctions between NREM and REM brain wave activity.

Question 17

The independent and dependent variables in Christine's investigation respectively are:

A. age; sleep duration

B. amount of NREM and REM sleep; age

C. NREM sleep; REM sleep

D. sleep duration; age

Question 18

Based on Christine's results and your knowledge of a typical night's sleep, which of the following statements comparing the sleep of an adolescent and an elderly person is most likely?

A. Elderly people experience more sleep episodes than adolescents as they spend a shorter total time in REM sleep.

B. Adolescents experience a biological delayed sleep onset, meaning they spend less total time in NREM sleep than elderly people.

C. Adolescents and elderly people experience similar proportions of REM and NREM sleep, but adolescent experience a longer total time in REM sleep.

D. Adolescents and elderly people experience similar proportions of REM and NREM sleep, but elderly people experience a longer total time in NREM sleep.

Use the following information to answer Questions 19 & 20.

Tania, a university student, wants to improve her sleep-wake patterns as she often finds it difficult to initiate sleep and must wake up early for her classes. As a result, Tania frequently experiences partial sleep deprivation. She focuses on maintaining a comfortable temperature in her bedroom and making mindful choices about her eating and drinking habits. She also seeks the assistance of a psychologist. Overtime, she notices that these changes help her feel more refreshed and improve her sleep.

Question 19

Tania has:

A. improved her sleep hygiene, practices and habits that positively influence sleep patterns by changing her eating and drinking habits around bedtime.

B. used zeitgebers, which are external cues such as the temperature of her room to influence her ultradian rhythms.

C. used zeitgebers, which are internal physiological cues such as her body temperature to influence her circadian rhythms.

D. improved her sleep hygiene, external cues from the environment such as eating and drinking patterns that influence the circadian rhythm.

Question 20

In terms of the development of mental health disorders, Tania's ongoing sleep deprivation could be considered a:

A. biological risk factor

B. psychological risk factor

C. social risk factor

D. protective factor

Question 21

Which of the following would not be expected of REM sleep?

A. Very low somatic activity, little if any movement meaning the sleeper appears paralysed.

B. The amount of time spent in this stage of sleep increases as the sleep episode progresses.

C. Vivid, highly detailed dreams are likely to occur.

D. Brain activity is very low and is likely less active than in normal waking consciousness.

Use the following information to answer Questions 22 – 24.

Mavis, as a sleep researcher, is studying advanced sleep phase disorder (ASPD). To collect data, she conducts interviews with participants diagnosed with ASPD to gather information about their experiences. Additionally, she measures their hours spent asleep using a smartwatch, which provides objective data on their sleep patterns.

Question 22

Mavis has collected:

A. primary qualitative data through the interviews and quantitative data by collecting the hours spent sleeping.

B. primary qualitative data using the smart watch.

C. secondary qualitative data using the smart watch and quantitative data through the interviews.

D. secondary quantitative data using the interviews.

Question 23

Which of the following is an ethical guideline that Mavis must follow before beginning her study?

A. debriefing

B. informed consent

C. withdrawal rights

D. confidentiality

Question 24

Which of the following correctly describes ASPD and the appropriate treatment Mavis could recommend to her participants?

	Advanced sleep phase disorder (ASPD)	Treatment
A.	A circadian rhythm disorder characterised by later sleep onset and awakening than what is desired.	Improved sleep hygiene including not using electronics and exposing themselves to blue light in the early evening .
B.	An inability to initiate and maintain sleep resulting in reduced total hours sleeping.	Increase the use of electronics particularly those that emit blue light in the early evening or late afternoon.
C.	A circadian rhythm disorder characterised by an advance in timing of sleep onset and awakening.	Bright light therapy in the afternoon or early evening to suppress the secretion of melatonin.
D.	A sleep disorder in which sleep and awakening occur earlier than desired.	Bright light therapy in the early evening to stimulate the release of melatonin.

Question 25

Which of the following statements correctly describes the biological mechanisms that regulate sleep-wake patterns?

A. The sleep-wake cycle is a circadian rhythm as it involves biological changes that follow a pattern over a period of less than 24 hours.

B. The superchiasmatic nucleus works to regulate the sleep-wake cycle by acting like an internal body clock.

C. The sleep-wake cycle is an example of an ultradian rhythm made up of REM and NREM stages which follow a circadian rhythm.

D. The superchiasmatic nucleus receives information from both external and internal cues to help modulate ultradian rhythms.

Use the following information to answer Questions 26 – 28.

A researcher was investigating the effects of sleep deprivation. The participants were deprived of sleep for a period of 72 hours. Their behaviour was observed and data on their daily caffeine intake was also collected.

Question 26

The researcher observed a range of symptoms experienced by the participants. Which of the following correctly identifies likely affective, cognitive, and behavioural effects of sleep deprivation?

	Affective	Cognitive	Behavioural
A.	poor emotional regulation	increased concentration	excessive sleepiness during the day
B.	increased likelihood of engaging in risk-taking behaviours	difficulty judging other people's emotions	diminished social functioning and impaired control of behaviour
C.	reduced empathy toward others	impaired decision-making and problem solving	slowed reaction times
D.	reduced concentration	impaired visual and spatial ability	increased aggression and impatience

Question 27

When the researcher considers the relationship between the participants' sleep deprivation and their caffeine consumption, they are using:

A. a controlled experiment which considers the cause-and-effect relationship between caffeine consumption and the effects of sleep deprivation.

B. a simulation which provides insight into the potential influence of caffeine on sleep deprivation.

C. a correlational study as there is no manipulation of the variables, caffeine consumption and sleep deprivation.

D. classification and identification as complex phenomena such as the influence of caffeine on sleep deprivation can be simplified and explained.

Question 28

Which ethical concept is potentially violated in this study by depriving participants of sleep for 72 hours?

A. Debriefing, participants are likely to have reduced cognitive functions and therefore not fully understand the information provided by the experimenter at the conclusion of the study.

B. Informed consent, as the study progresses participants may no longer understand their rights or the associated risks of prolonged sleep deprivation.

C. Non-maleficence, the research involves potential harm to the participants both psychologically and physically as they are required to go without sleep for 72 hours.

D. Justice, the study is immoral as it requires participants to stay awake for 72 hours.

Question 29

Which of the following options provides an accurate description of stress, anxiety, and phobia?

	Stress	Anxiety	Phobia
A.	The response might be to an unknown stimulus.	The sympathetic nervous system becomes dominant.	Is always maladaptive.
B.	Feelings can either be positive or negative.	The response might be to an unknown stimulus.	The feeling of fear is disproportionate and excessive.
C.	The sympathetic nervous system becomes dominant.	The response is always to a known stimulus.	The response is to a known stimulus.
D.	The feeling of fear is disproportionate and excessive.	Feelings of apprehension, unease, and worry.	The sympathetic nervous system becomes dominant.

Question 30

Which one of the following is a difference between protective factors and risk factors in the progression of mental disorders?

A. Risk and protective factors are unrelated to the progression of mental disorders.

B. If an individual has more risk factors than protective factors, they will develop a mental disorder.

C. Approach coping strategies and the ability to demonstrate coping flexibility can be protective factors but are unlikely to be risk factors.

D. Biological factors such as genetics, can present as risk factors but cannot be protective factors.

Question 31

Which of the following correctly describes a biological and a psychological factor that contribute to the development of a specific phobia?

	Biological	Psychological
A.	Through repeated coactivation, the signals involved in a phobic reaction are less readily triggered.	GABA levels are extremely low and classified as dysfunctional.
B.	Neural connections involved in perceiving a phobic stimulus are strengthened due to frequent coactivation.	An individual has a predisposition to think about and process information relating to the phobic stimulus in a negative way.
C.	An individual has unusually high levels of GABA.	An individual experiences a fear of being negatively labelled by others and is reluctant to seek treatment.
D.	The individual has inaccurate or exaggerated memories about their previous experiences with a specific trigger.	The phobic stimulus is perpetuated through classical conditioning.

Use the following information to answer Questions 32 – 34.

Whenever Zena encounters a spider, even a small one, she experiences intense fear and anxiety. This fear is so overwhelming that it affects her daily life. She avoids going to places where she might encounter a spider and avoids parking her car in her home garage. She feels embarrassed about the effect this is having on her life and is reluctant to talk to anyone about it.

Question 32

According to behavioural models, it is likely that Zena has:

A. a diagnosable phobia of spiders that is likely to have been learnt through observational learning.

B. anxiety associated with seeing a spider that involves precipitation by operant conditioning and perpetuation by classical conditioning.

C. stress associated with encountering a spider perpetuated by operant conditioning and precipitated by classical conditioning.

D. a phobia of spiders that is being perpetuated by operant conditioning.

Question 33

A psychologist suggests that Zena should engage in a psychotherapeutic treatment. This could involve:

A. psychoeducation for her family and friends.

B. the use of systematic desensitisation.

C. antagonist medications.

D. GABA agonist medications.

Question 34

Zena's embarrassment is an example of:

A. a personal maintaining factor that makes her experience worse.

B. a specific environmental trigger.

C. a psychological risk factor.

D. stigma around seeking treatment.

Question 35

Psychoeducation for family and friends of a person with a phobia is:

A. A biological intervention that focuses on teaching the friends and family of someone with a phobia the importance of breathing retraining.

B. A social intervention that teaches friends and family about the nature of phobia, particularly the importance of challenging unrealistic thoughts.

C. A psychological intervention that involves family and friends learning how to encourage someone with a phobia to directly confront their phobic stimuli.

D. A social intervention that teaches the individual with the phobia to rely on their friends and family to avoid their phobic stimuli.

Use the following information to answer Questions 36 – 38.

A researcher conducted an investigation on study habits and academic performance. Participants reported the hours they spent studying using an online platform. To confirm this, electronic records from the platform were also used to track their activity.

Question 36

When analysing the results of the study, the researcher noticed some inconsistencies in the data. Some of the hours recorded by the participants did not align with the electronic records supplied by the online platform, some were higher and some were lower.

This discrepancy could be due to:

A. random errors as they are not systematic and do not affect all results evenly.

B. systematic errors as the discrepancies are the result of a flaw in the electronic system.

C. personal errors as the participants lied so it looked as if they studied more.

D. a lack of external validity as it is unlikely the sample represented the population.

Question 37

The researcher believes their study has high reproducibility which means:

A. if conducted again using the same method and participants, the researcher would record the same results.

B. if the study were repeated by a different researcher using different participants, they would obtain similar results.

C. the method involved multiple measurements and therefore a cause-and-effect relationship can be determined.

D. the sample used is representative of the intended population.

Question 38

The experimenter notes that the standard deviation of the data set is high. What does this suggest about the effect of study habits on academic performance?

A. Study habits have a significant positive effect on academic performance.

B. Study habits have a significant negative effect on academic performance.

C. Study habits have a mixed effect on academic performance.

D. The effect of study habits on academic performance cannot be determined based on the standard deviation alone.

Question 39

Which statistical technique is most suitable for reducing the impact of outliers in a data set?

A. mean

B. median

C. standard deviation

D. percentage

Question 40

Which of the following options provides an appropriate description of accuracy and precision?

	Accuracy	Precision
A.	A measure of the reproducibility of the measurement.	A measure of the closeness with the true value of the quantity.
B.	Can be determined with a single measurement.	Required several measurements to be determined.
C.	Describes how closely a set of measurements are grouped with each other.	A measurement which represents the reproducibility of the study.
D.	Describes how close a measurement is to the true value.	Dependent on accuracy.

END OF SECTION A

SECTION B

Instructions for Section B

Answer **all** questions in the spaces provided.

Use the command / task words, other instructional information within questions and corresponding mark allocations to guide the content and length of your responses.

Section B is worth 80 marks.

Question 1 (8 marks)

As a professional half-pipe snowboarder, Tim trains regularly to perfect his technique and aerial tricks. He also has aphantasia which at times makes it difficult for him to learn new tricks. Tim finds that despite his aphantasia he can learn new tricks, particularly when his coach yells out positive comments when he performs a new trick correctly.

a. Describe the synaptic processes that occur as Tim trains regularly which enable him to learn new techniques and aerial tricks. (3 marks)

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b. Explain why Tim's aphantasia might make learning new tricks using observational learning difficult. (2 marks)

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c. With reference to a three-phase model of learning explain how Tim learns to perform new tricks using feedback from his coach. (3 marks)

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Question 2 (9 marks)

Julie is completing year 12. Recently before walking into her Mathematics SAC, Julie realised she had forgotten her calculator. She started to panic, she felt herself begin to sweat and her heart started beating quickly. She frantically ran back to her locker to look for her calculator.

a. With reference to the relevant nervous system, explain Julie's physiological response when she realised she did not have her calculator. (2 marks)

b. Identify which subdivision of the peripheral nervous system is responsible for the movements which allowed Julie to run back to her locker and explain the sequence of biological processes that occurred. (4 marks)

c. Classify the type of long-term memory Julie formed of this event and explain the role of the brain structures involved in forming the memory. (3 marks)

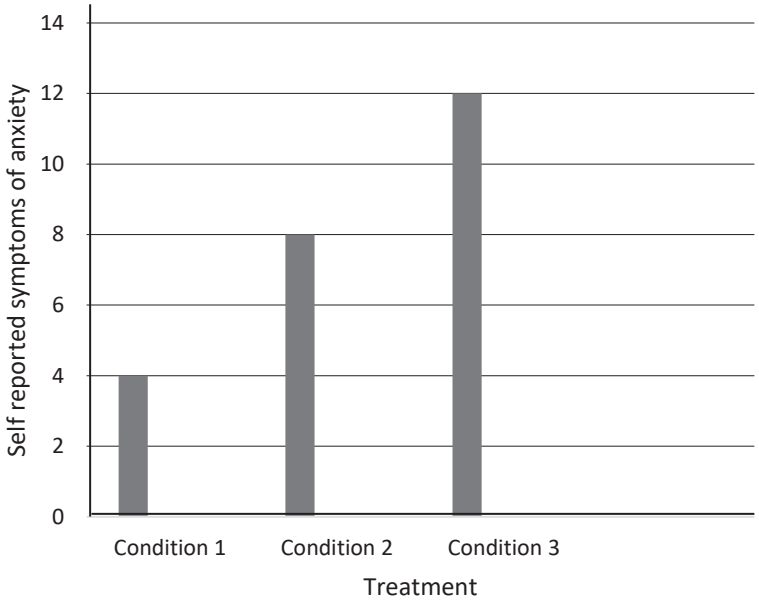
Question 3 (16 marks)

To compare the effects of two evidence-based treatment interventions on 120 patients with diagnosed animal phobias a research study was completed. Before encountering their animal phobic stimuli in a controlled setting, 40 participants were randomly allocated to one of the following conditions:

- Condition 1: a single session of breathing retraining
- Condition 2: administration of a benzodiazepine agent
- Condition 3: no treatment

In Condition 3, the participants experienced more symptoms of anxiety when they met a triggering animal than the participants in Condition 1 and Condition 2 as measured through a one-to-one interview with the experimenter following the experience. Further, those in Condition 2 reported fewer symptoms than those in Condition 1.

The results of the study are displayed in the graph below.



a. What conclusion can be drawn from the results about the effect of the evidence-based treatments on experiences of phobic stimuli? In your response, refer to the results shown in the graph above. (3 marks)

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b. Why did the experimenter include Condition 3 is this experiment? (2 marks)

c. Identify the controlled experimental design used in this experiment and compare this with a mixed experimental design. (3 marks)

d. Explain how breathing retraining could be used by the participants to assist in lowering their experience of phobic symptoms. (2 marks)

e. Suggest how the benzodiazepine agent administered to those in Condition 1 could help to manage the experience of phobic symptoms. (3 marks)

f. The interventions employed by the researcher can be categorised as biological interventions. Suggest and explain how one evidence-based psychological intervention could be used to assist the participants in managing their specific phobia of animals. (3 marks)

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Question 4 (7 marks)

Koen strongly identifies with his Indigenous heritage and actively engages with his community to deepen his cultural connection. He regularly participates in various community activities, such as learning on country, sharing stories and songlines, and establishing meaningful relationships with fellow community members.

a. Justify if Koen's active involvement in community activities would allow him to experience cultural continuity and self-determination. (4 marks)

b. Learning can occur within a multi-modal system. With reference to Koen, explain this approach to learning and outline how this differs from a behaviourist approach to learning. (3 marks)

Question 5 (14 marks)

Thomas has worked for many years as a police officer, which requires that he works night shifts. Thomas regularly finds it difficult to adjust following a period of night shift, often not sleeping for over 24 hours. Recently he has been struggling to find balance in his life, has been feeling isolated from his friends and his doctor diagnosed him with a digestive illness.

a. When he received the diagnosis, what stage of Selye's General Adaption Syndrome was Thomas most likely experiencing? Justify your response. (3 marks)

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b. Suggest how stress resulting from Thomas' high-pressure job as a police officer may have contributed to his digestive disorder. In your response outline the interaction of gut microbiota with stress and the nervous system. (3 marks)

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c. Explain the effects on cognitive functioning that are relevant to driving a vehicle with a BAC of 0.05 compared to one night of full sleep deprivation. (3 marks)

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d. Explain a treatment Thomas could use to address his lack of sleep due to his shift work. (3 marks)

e. Referring to Thomas, explain what is meant by social wellbeing and emotional wellbeing and suggest how these may influence his mental health. (3 marks)

Question 6 (15 marks)

Hannah was conducting her student-designed scientific investigation.

Below is an extract from her scientific poster.

Independent variable (IV): Memory technique; acronyms or no acronyms

Dependent variable (DV): Recall ability

Sample: 20 students from Year 12 at Rhodes High School, 10 males and 10 females with a mean age of 16.5 years old.

Hypothesis: If students use acronyms, then they will recall more statements

Method:

1. Group 1 were presented with a list of 15 four-word statements and corresponding acronyms and instructed to study them for 2 minutes.

2. After 2 minutes the stimulus material was removed, and the group were instructed to write down as many of the statements as possible on a blank sheet of paper.

3. Steps 1 and 2 were repeated with group 2, however they were only presented with a list of 15 four-word statements to study for 2 minutes.

Results:
Group 1 recalled a mean of 12 four-word statements correctly whilst group 2 recalled a mean of 6 four-word statements.

a. Hannah's teacher marks her down for the way she has written her hypothesis. Provide an alternative improved hypothesis for Hannah's investigation. (3 marks)

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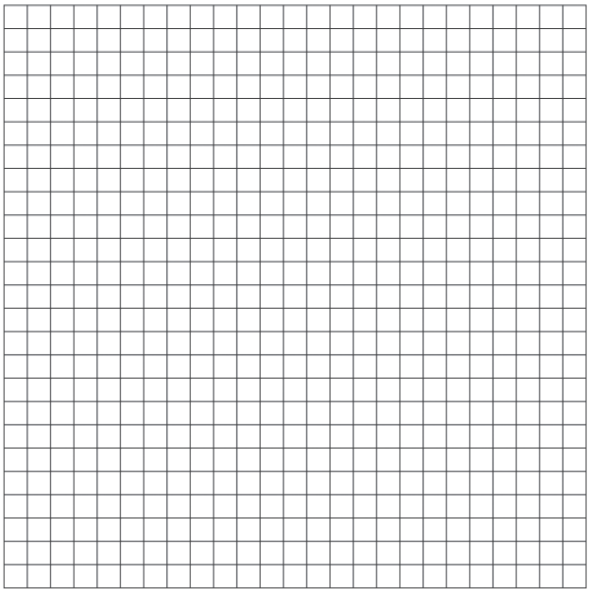
b. Represent the results of Hannah's investigation using a correctly labelled graphical representation on the grid provided below. (3 marks)



c. Outline how acronyms can be used to increase the retrieval of information and refer to Hannah's findings in your response. (3 marks)

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d. With reference to the capacity of short-term memory suggest why the participants in group 2 were only able to recall a mean of 6. (2 marks)

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e. Identify the neurotransmitter involved in the participants' learning of the four-word statements and describe its role in learning. (2 marks)

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f. Comment on the external validity of Hannah's investigation. (2 marks)

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Question 7 (10 marks)

An experimenter is currently conducting a study to explore the relationship between stress and physical health. They will be looking at cortisol and serotonin levels in this investigation. The study involves two groups: a stress group and a control group.

The participants in the stress group are exposed to chronic stressors over a period of four weeks. These stressors include tasks that are known to induce stress, such as public speaking, solving complex puzzles, meeting academic deadlines, facing social pressures, and taking on additional responsibilities. In contrast, the control group does not experience any additional stressors and continues with their regular daily routines.

Before starting the experiment, the experimenter collects blood samples from both groups to measure their cortisol and serotonin levels. Blood samples are then collected every week throughout the four-week study to observe any changes in cortisol and serotonin levels. Additionally, each participant is asked to complete a Stress and Well-being Assessment, a short questionnaire that assesses their stress levels, mood and perception of physical health on a weekly basis.

The experimenter predicted that the stress group would exhibit a gradual decrease in serotonin levels over the four weeks, while their cortisol levels would increase. On the other hand, the control group is expected to show little to no changes in both serotonin and cortisol levels. Furthermore, it was anticipated that the stress group would report a decline in mood and perception of physical health, as measured by the Stress and Well-being Assessment, in comparison to the control group.

Explain why the experimenter hypothesised the results suggested above. Support your answer with relevant psychological theories and models. Evaluation of the study's methodology and method is not required. (10 marks)

END OF TRIAL EXAMINATION