

Trial Examination 2023

VCE Psychology Unit 3

Written Examination

Question and Answer Booklet

Reading time: 15 minutes

Writing time: 1 hour 30 minutes

Student's Name: _____

Teacher's Name: _____

Structure of booklet

Section	Number of questions	Number of questions to be answered	Number of marks
A	30	30	30
B	7	7	60
			Total 90

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 correction fluid/tape.

No calculator is allowed in this examination.

Materials supplied

Question and answer booklet of 24 pages

Answer sheet for multiple-choice questions

Additional space is available at the end of the booklet if you need extra paper to complete an answer.

Instructions

Write your **name** and your **teacher's name** in the space provided above on this page, and on the answer sheet for multiple-choice questions.

All written responses must be in English.

At the end of the examination

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

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

Students are advised that this is a trial examination only and cannot in any way guarantee the content or the format of the 2023 VCE Psychology Units 3&4 Written Examination.

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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.

Question 1

Which two major divisions of the nervous system are responsible for coordinating a response to sensory stimuli?

- A. the brain and spinal cord
- B. the central and peripheral nervous systems
- C. the somatic and autonomic nervous systems
- D. the sympathetic and parasympathetic nervous systems

Question 2

When Vijay's forearm is accidentally pierced by a rose thorn, his arm reflexively withdraws and Vijay experiences an intense level of pain.

Which one of the following shows the correct order of initial activation of the divisions of the nervous system and Vijay's awareness of the pain?

- A. awareness, central nervous system, peripheral nervous system
- B. peripheral nervous system, central nervous system, awareness
- C. peripheral nervous system, awareness, central nervous system
- D. central nervous system, peripheral nervous system, awareness

Question 3

Mauve felt threatened when she sensed that she was about to be attacked by a swarm of bees.

Which one of the following physiological responses would have been suppressed as Mauve sprinted away from the bees?

- A. breathing rate
- B. digestive processes
- C. adrenal gland activity
- D. liver production of glucose

Question 4

Excitatory and inhibitory neurotransmitters play key roles in the nervous system.

When compared to an excitatory neurotransmitter, an inhibitory neurotransmitter is less likely to

- A. trigger the firing of a post-synaptic neuron.
- B. bind with a receptor on a post-synaptic neuron.
- C. be released into the bloodstream as a result of an action potential.
- D. be released from an axon terminal as a result of an action potential.

Use the following information to answer questions 5–9.

A university was studying the effects of background music on student learning of material outside of class time. A group of 49 VCE students were recruited from a number of regional schools to participate in the study.

The procedure of the study is summarised as follows.

- Each student was required to learn two separate lists of 30 unrelated word pairs; for example, horse–plant, cover–flint.
- Under the first condition, the students were given 20 minutes to learn the word pairs from the first list while wearing noise-cancelling headphones (supplied by the university) but without music playing through the headphones.
- The students were then immediately tested after the 20-minute period by being given the first word from 20 of the word pairs to see if they could remember the second word from each pair.
- The second condition followed the same process as the first condition, except the students were required to learn the word pairs from the second word list while listening to a predetermined playlist of music through the headphones.

A summary of the results is shown in the following table.

	Condition 1 (silent)	Condition 2 (background music)
Mean number of words recalled from the unrelated word pairs (out of 20 pairs)	11.4	7.8
Mode	10	10
Median	12	7
Standard deviation	2.8	3.0

Question 5

Which one of the following research investigation designs was used in this study?

- A. mixed design
- B. within subjects
- C. between subjects
- D. correlational study

Question 6

Which one of the following is the most useful measure of central tendency in the study due to its representation of all scores in the sample?

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

Question 7

Under each condition, the students were required to spend 20 minutes learning the word pairs.

This period of time was

- A. a dependent variable.
- B. a controlled variable.
- C. an independent variable.
- D. a confounding variable.

Question 8

As a follow-up to the study, a day after the two tests, the students were asked to recall the word pairs while wearing the noise-cancelling headphones under the same test conditions to determine how well the material was maintained in the students' memory. It was found that less than 10% of the words from the word pairs under both conditions could be recalled.

This could best be explained by

- A. long-term depression.
- B. a lack of reinforcement.
- C. an absence of long-term potentiation.
- D. the limitations of the duration of long-term memory.

Question 9

Following the publication of the study's findings, a researcher from another faculty made a criticism of the study. They claimed that the results may have been different if the study had tested participants from populated city areas, rather than exclusively testing students from regional areas.

This criticism relates to

- A. accuracy.
- B. true value.
- C. internal validity.
- D. external validity.

Question 10

Which one of the following is most likely to act as a neuromodulator that inhibits impulsive behaviour?

- A. gamma-amino butyric acid (GABA)
- B. serotonin
- C. glutamate
- D. dopamine

Question 11

Val was walking on a footpath to school while listening to music through her earbuds and looking at her phone. She suddenly looked up and saw another student on a motorised scooter travelling very quickly towards her. Val briefly froze and, fortunately, the student on the scooter managed to avoid her.

In terms of the flight-or-fight-or-freeze response, Val's response is an example of

- A. an acute response triggered by the sympathetic nervous system.
- B. a chronic response triggered by the sympathetic nervous system.
- C. an acute response triggered by the parasympathetic nervous system.
- D. a chronic response triggered by the parasympathetic nervous system.

Question 12

In terms of the relationship between sustained feelings of stress and the gut–brain axis (GBA), what is the sequence of physiological and psychological responses that an individual who is exposed to a high level of stress would experience?

- A. sustained feelings of stress, changes in gut microbiota, high levels of cortisol
- B. high levels of cortisol, changes in gut microbiota, sustained feelings of stress
- C. changes in gut microbiota, high levels of cortisol, sustained feelings of stress
- D. sustained feelings of stress, high levels of cortisol, changes in gut microbiota

Question 13

Vindu was stressed during a recent examination period at school. In terms of Selye's General Adaptation Syndrome, Vindu was experiencing a high level of resistance to the stress of the examinations for an extensive period and only started to relax after his final examination.

Shortly after his final examination, it is most likely that Vindu then

- A. experienced counter shock.
- B. entered the exhaustion stage.
- C. experienced a freeze-like response.
- D. returned to a normal level of resistance via activation of his parasympathetic nervous system.

Use the following information to answer Questions 14 and 15.

Merna has been told that she has earned a promotion at work. She is mindful that she will need to maintain a high level of energy for a sustained period in order to meet the demands of her new role. She is also mindful that she will need to do a lot more public speaking, which she lacks confidence in but is an area where she is eager to develop her skills.

Question 14

In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, Merna has most likely appraised her promotion as

- A. a threat.
- B. irrelevant.
- C. a challenge.
- D. benign-positive.

Question 15

In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, Merna's coping with the news of the promotion demonstrates

- A. avoidant coping prior to a secondary appraisal.
- B. approach coping prior to a secondary appraisal.
- C. avoidant coping after a secondary appraisal.
- D. approach coping after a secondary appraisal.

Use the following information to answer Questions 16–20.

Lizzie used to regularly eat a bowl of porridge mixed with low-fat yoghurt. During the first week of a school term, her father switched to buying a coconut-flavoured yoghurt. Lizzie ate her porridge with the coconut-flavoured yoghurt four mornings in a row and each day she would feel nauseous a couple of hours after eating. Lizzie was unaware that it was the ingredients in the coconut-flavoured yoghurt that caused her to feel nauseous. As a result of eating the yoghurt with her porridge for the four days, Lizzie would feel cramps in her stomach at the sight of porridge.

Question 16

In this scenario, the sight of the porridge represents

- A. an unconditioned stimulus only.
- B. a neutral stimulus and a conditioned stimulus.
- C. a neutral stimulus and an unconditioned stimulus.
- D. a conditioned stimulus and an unconditioned stimulus.

Question 17

In this scenario, the nausea represents

- A. a neutral stimulus.
- B. a conditioned response.
- C. an unconditioned stimulus.
- D. an unconditioned response.

Question 18

During the second week of the school term, Lizzie chose to not eat breakfast altogether and found that she lacked her usual level of energy by morning recess at school. She decided to start having toast for breakfast at the start of the third week of term.

Lizzie's behaviour of not eating breakfast was

- A. positively punished.
- B. negatively punished.
- C. positively reinforced.
- D. negatively reinforced.

Question 19

During the second week of term, Lizzie's younger sister Mavis observed that Lizzie was not eating breakfast. Mavis was unaware of how tired Lizzie was by morning recess and decided to not eat breakfast during that week so that she could be like her older sister.

In terms of observational learning, which one of the following stages can best be linked to Mavis's failure to learn the importance of eating breakfast?

- A. attention
- B. retention
- C. reproduction
- D. reinforcement

Question 20

Lizzie's older brother, Niko, was writing a psychological investigation report for his university course. He decided to write about Lizzie's conditioning of her dislike of porridge.

Niko's investigation is an example of

- A. modelling.
- B. a simulation.
- C. a case study.
- D. a controlled experiment.

Question 21

According to the Atkinson-Shiffrin multi-store model of memory, explicit memories are retrieved into

- A. explicit memory.
- B. sensory memory.
- C. long-term memory.
- D. short-term memory.

Use the following information to answer Questions 22–25.

Yavi submitted a PhD proposal to research the effects of Alzheimer's disease on memory over time. She proposed to study a small group of patients who had been diagnosed with Alzheimer's disease and interview them annually in order to generate qualitative data in terms of the level of decline in memory over the course of the disease.

Yavi's supervisor has suggested that Yavi also employ brain-imaging techniques in her research so that Yavi can compare the interview data and brain-imaging data, which would enable her to determine if there is a relationship between the decline in memory and changes to the key brain structure that is responsible for autobiographical memories.

Question 22

Which one of the following scientific investigation methodologies is Yavi's proposed research an example of?

- A. fieldwork
- B. modelling
- C. a simulation
- D. a controlled experiment

Question 23

Given the cognitive impairment of patients with Alzheimer's disease, which one of the following ethical concepts or guidelines would be the most difficult for Yavi's investigation to satisfy?

- A. confidentiality
- B. use of deception
- C. non-maleficence
- D. informed consent procedures

Question 24

Which one of the following brain structures would be most likely to show signs of change during the first couple of years of Alzheimer's disease?

- A. amygdala
- B. cerebellum
- C. hippocampus
- D. basal ganglia

Question 25

Yavi's supervisor is concerned that some of the patients may forget about their involvement in the interviews during the early years of the study, which would affect the ability to study the patients when their memories are more severely affected by the disease.

The ability to remember the nature and details of the interviews is best described as

- A. implicit memory.
- B. sensory memory.
- C. episodic memory.
- D. a conditioned response.

Question 26

Which one of the following mnemonics from a written practice requires a level of visualisation during both encoding and retrieval?

- A. acrostics
- B. acronyms
- C. songlines
- D. method of loci

Question 27

Gabrielle purchased her first road bicycle after spending some time at the gym during winter riding a stationary exercise bike. The first time she used her road bike, she felt unbalanced and lacked confidence when riding at fast speeds. Over time, her posture and body position on the bike changed as she became confident handling the bike through repetition.

Which one of the following brain structures played a key role in Gabrielle learning how to automatically position her body on the bike?

- A. amygdala
- B. cerebellum
- C. hippocampus
- D. basal ganglia

Use the following information to answer Questions 28–30.

Jan was standing in her backyard with her elderly father Max. She was describing how some planned extensions to her house would affect the backyard space.

Question 28

When Max was listening to Jan, he failed to remember some of the details of her descriptions despite hearing her quite clearly.

This can best be explained by the limitations of Max's

- A. glutamate.
- B. sensory memory.
- C. long-term memory.
- D. short-term memory.

Question 29

Later that evening, Max was explaining some of the details of his conversation about the extension plans to his wife.

This would have involved the retrieval of

- A. implicit memory only.
- B. semantic memory only.
- C. episodic memory only.
- D. both semantic and episodic memory.

Question 30

If Max was suffering from aphantasia, he would have difficulty

- A. understanding Jan's descriptions.
- B. encoding Jan's descriptions of her extension plans.
- C. visualising the planned extensions to Jan's house.
- D. storing details about his observations of the backyard in its current state.

END OF SECTION A

SECTION B**Instructions for Section B**

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

Question 1 (9 marks)

When Kip was in primary school, he observed his parents and older siblings regularly drinking cups of coffee as they sat around the kitchen table in the morning. Kip wanted to try coffee but was told by his parents that he was not allowed to have coffee until he started high school. On Kip's first day of high school, he drank his first cup of coffee at breakfast and enjoyed the taste and the feeling of energy that the drink gave him. He repeated this daily ritual of drinking a coffee with his breakfast for the next few months.

Later that year, Kip attended his first Year 7 camp. He woke up on the first morning at camp craving a cup of coffee, but unfortunately the camp did not provide coffee.

- a.** Identify a neuromodulator in the reward pathways in Kip's brain that would have played a role in developing his strong desire to have a coffee each morning. Explain its role. 3 marks

- b.** Identify and explain the three-phase behaviourist approach to learning that resulted in Kip's conscious behaviour of drinking coffee each morning. 3 marks

- c.** Identify and explain a social-cognitive approach to learning that would explain how Kip learned that coffee is a drink that is consumed in the morning. 3 marks

Question 2 (9 marks)

Triple jump is an athletics event in which the athlete performs a run-up, hops using one foot, and then steps using the other foot to jump as far as possible.

Judy was a triple jumper who would traditionally hop with her left foot, then step with her right foot to jump and land with both feet. Her best jump using the technique was 12 metres. Her coach noticed that Judy's left leg was more powerful, so she suggested that Judy switch the leg she used for the hop and step.

Consequently, Judy tried hopping with her right foot, then stepping with her left foot to jump and landing with both feet. Initially, she had to try this new approach with a slow run-up because when she ran quickly, she instinctively hopped with her left foot. After a few training sessions, Judy could perform the new technique without thinking about which foot to hop with. Using this new technique, she achieved a new personal best of 13 metres.

- a. In terms of synaptic plasticity, explain how the connections between the neurons responsible for Judy's triple jumping technique changed through her repeated training. 5 marks

- b. What are the **two** brain structures involved in Judy's implicit memory of her feet movements when hopping, stepping and jumping? Explain their role in her implicit memory. 4 marks

Question 3 (7 marks)

Jack is studying techniques used by Australia's First Nations peoples to remember and learn important concepts.

- a.** In terms of Australia's First Nations peoples' ways of knowing, explain how learning can occur through both narrative and visualisation. Include examples in your response. 4 marks

Narrative _____

Visualisation _____

- b.** Explain how Australia's First Nations peoples used songlines to remember trade routes. 3 marks

Question 4 (10 marks)

A research team from Alpine University conducted a correlational study with people who were about to start working in jobs that, according to recent evidence, had been deemed to be stressful, for example, paramedicine. The research team would study microbiota levels in the guts of the participants, observing how these changed over time once the participants started working and how they impacted the health of the participants.

After five years of research, the team published a journal article that included anecdotes and opinions stating that there was some evidence that the effects of work-related stress had triggered changes in gut microbiota, which led to a significantly higher incidence of stress-related illnesses.

- a.** With reference to this scenario, explain what a correlational study is. 2 marks

- b.** Explain how the gut–brain axis (GBA) could have impacted the wellbeing of the people who were studied. 3 marks

- c.** Distinguish between anecdotes and opinions. In your response, include an example of each that could relate to this scenario. 3 marks

- d.** Explain how other researchers could help to ensure that the results from this study are robust.

2 marks

Question 5 (11 marks)

Raj is a university student who is conducting a literature review on two models of stress: Selye's General Adaptation Syndrome and Lazarus and Folkman's Transactional Model of Stress and Coping. Raj is exploring the different components of the models, distinguishing between the models and evaluating the methodologies used to develop the models.

- a.** In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, distinguish between a primary appraisal and a secondary appraisal. 2 marks

- b.** Explain the **three** stages of Selye's General Adaptation Syndrome. 3 marks

- c.** Identify and explain **three** differences between the models. 3 marks

- d. When Raj was researching Selye's experiments with rats, he believed that Selye must have measured the cortisol levels in the rats' bloodstreams in order to measure their level of resistance to a variety of stressors, in comparison to their normal level of resistance. Raj's review described some random and systematic errors in Selye's experiments.

With reference to Selye's measurements of cortisol levels in the rats' bloodstreams, distinguish between random and systematic errors.

3 marks

Question 6 (4 marks)

Vesna is a Year 7 student who has learned the acrostic 'My Very Educated Mother Just Served Us Nachos', which is used to remember the order of the planets in Earth's Solar System: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Through learning the acrostic, she can now easily remember the order of the planets.

In terms of the Atkinson-Shiffrin multi-store model, explain the role of each memory store in enabling Vesna to encode, store and retrieve the order of the planets.

Question 7 (10 marks)

A research team was studying the effectiveness of approach versus avoidant coping strategies in reducing the effects of chronic stress on the body. The research team decided to measure cortisol levels in hair follicles in order to generate quantitative primary data. The advantage of using hair follicles to measure cortisol levels is that, due to the slow growth rate of hair, the cortisol levels remain stable over a long period and can indicate the presence of high cortisol levels in the body from the past. In comparison, cortisol levels in blood fluids vary significantly over the course of a single day and thus hair provides a more repeatable measure.

The research team placed an advertisement on a social media platform asking for people aged 21–70 who had experienced at least one stressful event in the last 12 months to participate in the study. A random sample of 43 volunteers who responded to the advertisement was formed. Each participant was interviewed and asked questions about their method of coping with their stressful event by a group of psychologists. Based on the participants' descriptions of their coping methods, the psychologists then categorised 12 participants into the approach coping category and 31 participants into the avoidant coping category.

The study was a controlled experiment that used a between subjects design.

Despite the presence of eight outliers in the results, the researchers provided an anecdote stating that the type of coping strategy used has a major impact on the way that the body responds to a stressor.

Analyse the research team's study. In your response:

- explain the role of cortisol in the stress response and the effectiveness of approach versus avoidant coping strategies in coping with the demands of stress
- evaluate the investigation methodology used in the study in terms of the benefits and limitations of a controlled experiment, the between subjects design, the benefits of the types of data generated and the researchers' anecdote.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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