

Trial Examination 2023

VCE Psychology Units 3&4

Written Examination

Question and Answer Booklet

Reading time: 15 minutes

Writing time: 2 hours 30 minutes

Student's Name: _____

Teacher's Name: _____

Structure of booklet

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	40	40	40
B	10	10	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 correction fluid/tape.

No calculator is allowed in this examination.

Materials supplied

Question and answer booklet of 32 pages

Answer sheet for multiple-choice questions

Additional space is available at the end of the booklet if you need extra space 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.

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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

While outside one day, Min felt a bug near his ear and reflexively waved his hand near his ear to swat the bug away. He then used his fingers to check whether the bug was still on or near his ear.

Which one of the following sequences lists the correct order in which the subdivisions of Min's nervous system were activated?

- A. spinal cord → somatic nervous system → brain
- B. brain → spinal cord → somatic nervous system
- C. autonomic nervous system → spinal cord → brain → somatic nervous system
- D. somatic nervous system → spinal cord → somatic nervous system → brain → somatic nervous system

Question 2

In terms of Selye's General Adaptation Syndrome, when responding to a chronic stressor, the level of resistance to the stressor first starts to decline during the

- A. exhaustion stage.
- B. resistance stage.
- C. alarm reaction shock substage.
- D. alarm reaction countershock substage.

Question 3

Finn, who is a neurologist, is prone to impulsive and aggressive behaviour. He suspects that this is because his brain is deficient in a key chemical.

Which one of the following is most likely the deficient chemical?

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

Question 4

In terms of the gut–brain axis (GBA), which one of the following best explains how the gut affects the brain?

- A. The microbiota in the gut affects brain chemistry.
- B. The gut detects external stressors and triggers a response from the brain.
- C. The gut controls the immune system, which impacts the brain's response to infection.
- D. The gut activates the flight-or-fight-or-freeze response, which triggers a conscious response from the brain.

Use the following information to answer Questions 5–9.

A school principal engaged a group of researchers to investigate the relationship between the stress experienced by teachers at the school and the number of daily teacher absences.

The researchers designed a survey that featured 10 questions to which the teachers responded with subjective ratings on a scale of 0 to 5 to indicate their stress level – 0 being low stress and 5 being very high stress. Each teacher's responses were tallied so that each teacher was given a total score from 0 to 50. The researchers surveyed 118 teachers at the school.

Question 5

Which one of the following scientific investigation methodologies would the researchers most likely have used?

- A. fieldwork
- B. case study
- C. correlational study
- D. controlled experiment

Question 6

Which one of the following terms refers to the most frequently occurring total score out of 50 for the 118 teachers surveyed?

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

Question 7

The school had also considered whether to explore the relationship between the stress levels of teachers and daily teacher absences using a stratified sample.

If this sampling technique had been used, which one of the following would **not** have been required?

- A. a control group
- B. ethical consideration
- C. a determination of the sample size
- D. classification of staff into different groups based on characteristics such as age and gender

Question 8

After examining the results of the study, the researchers concluded that there is a strong relationship between stress levels of teachers and daily absenteeism. However, they now want to conduct further research with different schools in order to generate data that is more externally valid.

The researchers are attempting to achieve

- A. accuracy.
- B. precision.
- C. repeatability.
- D. reproducibility.

Question 9

In the publishing of their findings, the researchers discussed the difficulty of measuring stress levels of participants, as they described stress levels as a psychological construct that is difficult to quantify. They concluded that this must be factored in when considering the implications of the research findings.

This difficulty can best be explained by

- A. uncertainty.
- B. the presence of random errors.
- C. the presence of personal errors.
- D. the presence of systematic errors.

Question 10

High levels of light exposure can act as a zeitgeber and influence sleep-wake cycles.

Which one of the following statements about the effects of light on the melatonin levels that influence sleep is correct?

- A. Late evening exposure to blue light suppresses the release of melatonin and delays the onset of sleep.
- B. Late evening exposure to blue light triggers the release of melatonin and advances the onset of sleep.
- C. Early morning exposure to blue light triggers the release of additional melatonin, which helps arouse a person who has just woken up.
- D. Early morning exposure to red light triggers the release of additional melatonin, which helps arouse a person who has just woken up.

Use the following information to answer Questions 11–14.

When Josie was young, her family would go on annual beach holidays. Her parents would liberally apply sunscreen on Josie's skin, which would then trigger an allergic reaction in Josie. She would experience a persistent itchiness that would become so unbearable that she would wash the sunscreen off in the ocean water. This resulted in Josie becoming regularly sunburnt, which was always a painful and unpleasant experience.

After a couple of years of these repeated events, Josie became very anxious at the sight of sunscreen due to classical conditioning. She would throw tantrums so that she could avoid going to the beach and getting sunburnt. Her parents devised a solution by purchasing Josie sun protective clothing in the form of a waterproof hat, a rash shirt and swim leggings. The clothing was effective in providing sun protection for Josie and she no longer avoided going to the beach.

Question 11

Which one of the following is an unconditioned response in this scenario?

- A. the tantrums
- B. the itchiness
- C. application of sunscreen to the skin
- D. avoidance of the beach

Question 12

Which one of the following is the neutral stimulus in this scenario?

- A. the itchiness
- B. the sight of the sunscreen
- C. being asked to go to the beach
- D. application of sunscreen to the skin

Question 13

In terms of the three-phase process of operant conditioning, the consequence of Josie's avoidance of the beach is

- A. feeling itchy.
- B. throwing tantrums.
- C. avoiding getting sunburnt.
- D. being asked to go the beach.

Question 14

Josie's behaviour of wearing the sun protective clothing to go to the beach is an example of

- A. positive reinforcement.
- B. negative reinforcement.
- C. classical conditioning.
- D. observational learning.

Question 15

In a controlled experiment, a series of memory tests were performed on a patient who was suspected of having aphantasia.

The patient would have been least likely to correctly complete a memory test involving

- A. acrostics.
- B. acronyms.
- C. the method of loci.
- D. a list of six double-digit numbers.

Question 16

First Nations peoples traditionally use songlines to remember

- A. lists of words.
- B. lists of numbers.
- C. landmarks on a journey.
- D. items associated with imaginary locations.

Question 17

Which one of the following stages of observational learning most closely aligns with one of the three phases of operant conditioning?

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

Question 18

Which of the following parts of a neuron is removed in synaptic pruning?

- A. axons
- B. dendrites
- C. neurotransmitters
- D. soma (the cell body)

Question 19

According to Lazarus and Folkman's Transactional Model of Stress and Coping, which one of the following requires a substantial secondary appraisal?

- A. a primary appraisal determining the stressor is irrelevant
- B. a primary appraisal determining the stressor is a challenge
- C. a primary appraisal determining the stressor is benign-positive
- D. not having the coping resources to deal with the stressor

Question 20

According to the Atkinson-Shiffrin multi-store model of memory, which combination of memory stores are involved in the retrieval of stored information?

- A. sensory and long-term only
- B. sensory and short-term only
- C. short-term and long-term only
- D. sensory, short-term and long-term

Use the following information to answer Questions 21–25.

A team of researchers was interested in comparing the effectiveness of systematic desensitisation on the following three phobias.

1. phobia of insects and arachnids (for example, cockroaches and spiders)
2. phobia of outdoor spaces
3. phobia of injections

Three groups, each with 20 patients who had been diagnosed with one of the three phobias, were recruited to participate in the study. None of the patients had been treated with systematic desensitisation in the past, but several had received other forms of treatment.

During the baseline testing phase, each patient responded to a series of 10 questions that required them to give a numerical rating from 0 to 10 to indicate the severity of the fear they feel when exposed to variations of their phobic stimuli. Each patient's responses were tallied to generate a score out of 100, which served as a baseline measure.

The patients then completed a series of four weekly one-hour systematic desensitisation workshops. After completing the workshops, they then responded to the same 10 questions that they were asked during their baseline testing. The two sets of data were then compared.

Question 21

The type of data generated by the study is

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

Question 22

The participants potentially experienced psychological harm due to experiencing temporary levels of distress when exposed to the phobic stimuli in the workshops.

Prior to commencing the study, the researchers were required to provide evidence that the psychological harm would not be disproportionate to the benefits gained from the study.

Which ethical concept does this requirement relate to?

- A. justice
- B. respect
- C. integrity
- D. non-maleficence

Question 23

Critics of the study argued that the subjective nature of the rating scales used by the participants meant that the investigation lacked precision.

Precision in this case has been affected by

- A. outliers.
- B. random errors.
- C. personal errors.
- D. systematic errors.

Question 24

Which one of the following could potentially be an extraneous variable in the study?

- A. the small sample size
- B. a gender bias in one of the groups that was discovered after the study was completed
- C. no representation of participants who have phobias beyond the three tested
- D. whether participants had received other treatments prior to the study

Question 25

The use of systematic desensitisation in this study is classified as

- A. biological treatment.
- B. biopsychosocial treatment.
- C. psychoeducation treatment.
- D. psychotherapeutic treatment.

Question 26

During the course of a typical day, which one of the following age groups would typically have the earliest release of melatonin to induce sleep?

- A. young children aged 5–9
- B. adolescents aged 13–18
- C. young adults aged 20–29
- D. middle-aged adults aged 30–49

Question 27

NREM sleep has three stages.

Which one of the following techniques enables researchers to most accurately determine the duration of sleep for each stage of NREM sleep?

- A. electro-oculography (EOG)
- B. electroencephalography (EEG)
- C. sleep diaries
- D. video monitoring

Question 28

Which one of the following is **not** a zeitgeber and therefore would not affect the activity of the suprachiasmatic nucleus and, subsequently, the sleep-wake cycle of a secondary school student?

- A. physical exercise before bed
- B. consumption of a large meal late in the evening
- C. breaks in concentration during the day
- D. exposure to daylight

Use the following information to answer Questions 29–31.

Vida recently started a job as a baker. Her job requires her to wake up at 3:30 am, six days per week. Prior to starting her job at the bakery, Vida would generally go to bed at 11:30 pm and wake up at 7:30 am. During her first week in the job, she was incredibly tired because she had difficulty falling asleep before 11:30 pm. This meant that Vida only had four hours of sleep per night. Vida became increasingly clumsy at home in the evenings and experienced a decline in her mental wellbeing, both of which she attributed to her sleep deprivation. She booked an appointment to see a doctor to receive treatment to help her fall asleep earlier.

Question 29

Which of the following affected Vida's sleep-wake cycle?

- A. the effects of shift work
- B. Delayed Sleep Phase Syndrome (DSPS)
- C. Advanced Sleep Phase Disorder (ASPD)
- D. an ultradian rhythm sleep disorder

Question 30

Which one of the following types of symptoms can be used to classify clumsiness due to sleep deprivation?

- A. affective
- B. ultradian
- C. cognitive
- D. behavioural

Question 31

Vida's doctor explained that the effects of being awake for 20 hours straight are similar to having a blood alcohol concentration level

- A. between 0.01 and 0.05.
- B. between 0.05 and 0.10.
- C. between 0.1 and 0.5.
- D. between 0.5 and 1.0.

Use the following information to answer Questions 32–36.

Magnus and Leo are brothers who live on the outskirts of a regional town. They are regularly exposed to snakes and have had several terrifying encounters with them. Magnus does not usually worry about snakes, but he freezes in fear when he sees a snake, which happens on occasions when he is riding his bike to school. Leo, however, will not leave the house due to the severity of his fear of snakes.

Leo is currently enrolled in online schooling for his VCE year and is maintaining a high level of academic success. He regularly socialises with friends either online or at home. Leo has been happy being at home but he is starting to worry that he will not be able to find any work after he graduates at the end of the year. He has tried different types of interventions to treat his fear but he cannot cope with the thought of being outside due to his intense fear of snakes.

Question 32

In terms of Magnus's fear of snakes, he is experiencing

- A. stress.
- B. anxiety.
- C. a phobia.
- D. resilience.

Question 33

Magnus's response to the sight of the snake results in

- A. a spinal reflex.
- B. an unconditioned response.
- C. an increase in cortisol levels in his bloodstream.
- D. a flight-or-fight-or-freeze response to an acute stressor.

Question 34

Which section of the mental health continuum would Magnus most likely be placed in?

- A. having a mental disorder
- B. being mentally healthy
- C. having a mental health problem
- D. between being mentally healthy and having a mental health problem

Question 35

Leo is displaying a lack of

- A. resilience.
- B. functioning.
- C. social wellbeing.
- D. emotional wellbeing.

Question 36

Leo spoke with his school psychologist via a video call and mentioned that he only interacts with his friends online and at home.

Based on this information, the psychologist could have concluded that Leo's behaviour of staying at home is

- A. precipitating his phobia.
- B. perpetuating his phobia.
- C. contributing to long-term potentiation of his phobia.
- D. acting as a protective factor in dealing with his phobia.

Question 37

A study conducted by a university research team involved the coercion of a number of undergraduate students into participating in the study.

This breaches the ethical guideline of

- A. debriefing.
- B. non-maleficence.
- C. voluntary participation.
- D. use of deception in research.

Use the following information to answer Questions 38 and 39.

Mavis visited a friend who had just bought a farm that has a variety of animals, including alpacas. During her stay, Mavis was scared of the alpacas, who were very aggressive whenever she approached them. As a result of her experiences and a dysfunctional level of GABA in her brain, Mavis developed a phobia of farms.

Question 38

In terms of the development of her phobia of farms, Mavis's experiences with the alpacas served as a

- A. cognitive bias.
- B. neutral stimulus.
- C. conditioned stimulus.
- D. specific environmental trigger.

Question 39

Mavis has started to take benzodiazepines to treat her phobia.

Benzodiazepines typically have a

- A. long-acting effect on GABA receptors.
- B. short-acting effect on GABA receptors.
- C. long-acting effect on GABA axon terminals.
- D. short-acting effect on GABA axon terminals.

Question 40

An important component of the maintenance of wellbeing in First Nations peoples are the various practices that empower them to make important decisions that affect their lives.

This refers most specifically to

- A. resilience.
- B. cultural continuity.
- C. self-determination.
- D. social and emotional wellbeing.

END OF SECTION A

SECTION B**Instructions for Section B**

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

Question 1 (9 marks)

Percy started a new business two years ago using a bank loan. The business involves growing and wholesaling native plants to garden stores. Percy owes a large debt to the bank; he works long hours and is very stressed about his financial situation. Recently, Percy developed a stress-related illness and consequently took time off work. During his time off, Percy thought about strategies to reduce his stress, such as selling part of his business to reduce some of his financial obligations.

- a.** Explain the role of the gut–brain axis in Percy’s responsiveness to the stress. 3 marks

- b.** With reference to the stages of Selye’s General Adaptation Syndrome, explain the role that cortisol played in the development of Percy’s stress-related illness. 3 marks

- c.** In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, explain how a secondary appraisal resulted in Percy employing context-specific effectiveness. 3 marks

Question 2 (9 marks)

A research team was studying the biological changes in the developing brains of humans. Their investigation commenced during the infancy of their participants and continued into early adolescence. The team observed neuronal changes in the brain that occurred over this early part of the lifespan.

- a.** Explain why the ethical concept of integrity would have been a major consideration for the investigation. 2 marks

- b.** The research team was investigating the effects of synaptic pruning that occurs shortly after the completion of infancy.
In terms of synaptic plasticity, explain the importance of long-term depression and synaptic pruning in the cognitive development of young children. 3 marks

- c.** Another research team studied different brain structures that are involved in adolescent memory. With reference to examples relating to adolescent memory, distinguish between the role of the hippocampus and the basal ganglia in memory. 4 marks

Question 3 (3 marks)

Distinguish between the typical learning approach of a written culture and the multimodal system of learning of First Nations peoples and communities.

Question 4 (12 marks)

Bala is a post-graduate university student who has completed a literature review of Advanced Sleep Phase Disorder (ASPD). As a result of her extensive review, she has been granted funding from her university to conduct an investigation that will test the effectiveness of bright light therapy in treating patients who have severe cases of ASPD.

- a.** Why is the literature review important for Bala's investigation? 2 marks

- b.** Outline ASPD. 2 marks

- c.** In her literature review, Bala concluded that poor sleep hygiene combined with zeitgebers are the major causes of ASPD.

Explain how the combination of these factors could affect the sleep-wake cycle of an individual with ASPD. 3 marks

- d. Identify **two** affective symptoms of ASPD that may have been reported in the literature review.

2 marks

- e. Prior to performing the bright light therapy investigation, Bala has formulated a hypothesis that people with ASPD who are exposed to bright light therapy on a daily basis will report lower levels of sleep deprivation in comparison to those who do not have access to bright light therapy.

In the table below, identify the independent variable, dependent variable and a controlled variable in this investigation.

3 marks

Independent variable	
Dependent variable	
Controlled variable	

Question 5 (7 marks)

Five years ago, Jan was diagnosed with Alzheimer's disease. Jan lives on her own and her children visit her regularly. Jan has become increasingly confused and is having difficulty recalling autobiographical memories. She is aware that she has Alzheimer's disease and is experiencing a high level of anxiety.

- a.** In terms of each of the memory stores in the Atkinson-Shiffrin multi-store model of memory, explain how Jan's ability to encode and retrieve autobiographical memories is affected by her condition. 3 marks

- b.** Distinguish between the two types of long-term memory involved in Jan's recall of autobiographical memories. 2 marks

- c.** Describe how Jan's Alzheimer's disease may be impacting her anxiety. 2 marks

Question 6 (10 marks)

A research body is conducting a sleep study to investigate the effects of melatonin supplements that have been used to treat sufferers of DSPS on the ultradian rhythms of the different stages of sleep. The sleep study will use a variety of techniques, such as EEG, EOG, electromyography (EMG) and video monitoring, to generate data about sleep. The researchers are mindful that some of the techniques may lack internal validity in terms of identifying the different stages of sleep, as sleep has been referred to as a psychological construct.

- a.** Explain why sleep is referred to as a psychological construct. 2 marks

- b.** Explain how an EMG could be used to generate data about the proportions of REM compared to NREM sleep. 2 marks

- c.** Explain why **one** of the techniques used by the researchers may lack internal validity. 2 marks

- d.** In terms of ultradian rhythms, provide **two** clear distinctions between NREM stage 2 and NREM stage 3.

4 marks

Distinction 1 _____

Distinction 2 _____

Question 7 (8 marks)

A researcher is planning to conduct fieldwork that investigates different ways of exploring wellbeing across different cultures. Their investigation will include First Nations cultures and cultures that follow a mental wellbeing continuum approach.

- a.** Explain how the researcher could carry out their fieldwork with First Nations peoples. 2 marks

- b.** Outline the multidimensional and holistic framework for wellbeing for First Nations peoples. 2 marks

- c.** Explain why cultural determinants are integral to the wellbeing of First Nations peoples. 2 marks

- d.** Explain how a mental health continuum can be used as a way of exploring wellbeing. 2 marks

Question 8 (6 marks)

Helena lives with a psychiatric disorder that is triggered by an imbalance of dopamine levels in the brain. A neurologist is conducting a series of tests to learn more about Helena's condition.

- a.** The neurologist conducts a spinal reflex test. She taps on Helena's knee with a wooden hammer to test how the relevant subdivisions of Helena's central and peripheral nervous system respond to sensory stimuli. Helena makes a kicking movement in response to the hammer tap.

Identify and explain the subdivisions of the central and peripheral nervous systems that would be involved in a spinal reflex of Helena's knee.

3 marks

- b.** In another test, the neurologist measures the dopamine levels in Helena's brain when Helena is thirsty and how her levels of dopamine change when she sees a glass of water. The neurologist then asks Helena to drink the water to test the functionality of the dopamine in her brain. Based on the data obtained from the different stages of the test, the neurologist concludes that Helena's dopamine levels are at a functional level.

Explain the role of dopamine as a neuromodulator in regulating Helena's behaviour during the test.

3 marks

Question 9 (6 marks)

When Rip was young, he lived next door to a pit bull terrier that would occasionally run directly towards him, which was terrifying for Rip. Consequently, Rip developed a phobia of dogs.

- a.** Explain the role of long-term potentiation in the development of Rip's phobia. 3 marks

- b.** Rip's doctor has suggested that he try cognitive behavioural therapy (CBT) to treat his phobia.

Explain how the process of CBT could be used to treat Rip's phobia. 3 marks

Provide a detailed explanation of how the researchers could conduct the study to assess the paramedics' levels of wellbeing according to the biopsychosocial approach. Evaluate the proposed research investigation in terms of the sampling technique, investigation design, and methods of data collection.

[illegible]

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REFERENCES

Reardon M, Abrahams R, Thyer L and Simpson P (2020) 'Review article: Prevalence of burnout in paramedics: A systematic review of prevalence studies', *Emergency Medicine Australasia*, 32: 182–9, doi: 10.1111/1742-6723.13478.