

Trial Examination 2022

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	50	50	50
B	8	8	70
			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.

Students are advised that this is a trial examination only and cannot in any way guarantee the content or the format of the 2022 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

The autonomic nervous system

- A. operates independently of the brain.
- B. regulates skeletal muscle activity.
- C. autonomously regulates gland activity.
- D. is primarily responsible for regulating the body's circadian rhythm.

Question 2

As Esther walks through a park, her arm inadvertently touches a bush covered in prickly thorns, which triggers a spinal reflex.

Esther will first gain awareness of her arm touching the prickly thorns

- A. at the same time as a sensory neuron in her arm first conveys the message to her spinal cord.
- B. at the same time as interneurons in her spinal cord integrate sensory and motor information about the prickle.
- C. as a motor neuron conveys a message to her arm that triggers a withdrawal movement of the arm.
- D. following the withdrawal movement of her arm.

Question 3

Which one of the following best describes Parkinson's disease?

- A. a deficiency in the immune system
- B. a nervous system disorder
- C. a skeletal system disorder
- D. a visceral muscular disorder

Question 4

The gradual reduction of myelin levels in the brain's nerve cells would specifically result in

- A. the destruction of the nerve cells' cell bodies that are affected by the myelin loss.
- B. a reduced number of neurotransmitters being stored in the nerve cells.
- C. the slowing of the transmission of signals in the nerve cells.
- D. an agonistic effect in the nerve cells affected by the myelin loss.

Use the following information to answer Questions 5–8.

Malaika enjoyed her job as a car mechanic for eight years before being involved in a workplace accident that resulted in all toes from her left foot being severed. As a result of the accident, Malaika had to spend many hours in physical therapy relearning how to walk with a specially fitted shoe. Many months after the accident, despite having financial security from a work-injury compensation, Malaika became increasingly stressed about her inability to apply for new jobs that required regular movement and agility. She also started to experience occasional headaches.

Question 5

The source of Malaika's stress would best be identified as

- A. a catastrophe.
- B. a life event.
- C. acculturative stress.
- D. eustress.

Question 6

Which one of the following hormones plays a key role in mobilising Malaika's body so that she can deal with the stress of unemployment over a long period of time?

- A. cortisol
- B. adrenaline
- C. endorphins
- D. gamma-amino butyric acid (GABA)

Question 7

Which one of the following stages of Selye's General Adaptation Syndrome was Malaika most likely experiencing when affected by her occasional headaches?

- A. exhaustion
- B. resistance
- C. alarm (shock)
- D. alarm (counter shock)

Question 8

Which one of the following is an avoidant strategy that Malaika could use to cope with the stress of her unemployment?

- A. contacting a careers counsellor for advice
- B. channeling her energy into organising her father's 60th birthday party
- C. contacting her previous employer and asking if she could be re-employed as a supervisor
- D. booking an appointment for a physical assessment to determine her suitability for work as a car mechanic

Question 9

Which row of the table describes a difference between gamma-amino butyric acid (GABA) and glutamate?

	GABA	Glutamate
A.	stored in the receptors	stored in the axon terminals
B.	only affects the peripheral nervous system	only affects the central nervous system
C.	reduces the excitability of nerve cells	increases the excitability of nerve cells
D.	plays a key role in memory loss	plays a key role in memory

Question 10

In terms of neural plasticity, long-term depression

- A.** is short in duration.
- B.** explains the limitations of short-term memory.
- C.** occurs when a postsynaptic neuron becomes less responsive to a message from the presynaptic neuron.
- D.** only applies to explicit memories.

Question 11

In the consolidation of a flashbulb memory, which one of the following brain structures does adrenaline play a key role in activating?

- A.** amygdala
- B.** hypothalamus
- C.** cerebellum
- D.** basal ganglia

Use the following information to answer Questions 12–16.

Misha and Si-Woo have decided to employ a nutritional psychologist to help their child, Ivan, overcome poor dietary choices made during the school holidays, which have contributed to him gaining a significant amount of weight over a short time-span.

To improve Ivan's eating habits, the nutritional psychologist has proposed the following three options.

- Option 1: Misha and Si-Woo consume healthy foods only and regularly participate in exercise in front of Ivan to emphasise how their healthy diet gives them high levels of energy for exercise and effective work habits during the school holidays.
- Option 2: Misha and Si-Woo offer Ivan rewards for making healthy food choices in the kitchen; for example, he earns time to spend playing with a favourite toy when he eats three pieces of fruit and three servings of vegetables each day during the school holidays.
- Option 3: Misha and Si-Woo put nausea-inducing substances in some of the unhealthy food items that Ivan likes to eat, causing him to feel ill after consuming them with the intention of making him feel reflexively nauseous when he views the food in the kitchen.

Question 12

In terms of Ivan's learning process, which option would be the least cognitive?

- A. 1
- B. 2
- C. 3
- D. 1 and 2 equally

Question 13

Misha and Si-Woo are concerned that option 1 will be ineffective as Ivan will be less likely to observe their eating and exercise patterns due to the major difference in age.

Which one of the following stages of observational learning will the age difference affect most?

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

Question 14

If option 2 is chosen, which one of the following is the discriminative stimulus for Ivan?

- A. time spent playing with a favourite toy
- B. eating fruit or vegetables
- C. feeling hungry and venturing into the kitchen
- D. Misha and Si-Woo explaining to Ivan how he can earn time to play with a favourite toy

Question 15

One of the risks of option 3 is that Ivan may avoid a range of foods because of the effects of the conditioning.

This behaviour would be a result of

- A. stimulus generalisation that has been classically conditioned.
- B. stimulus discrimination that has been classically conditioned.
- C. stimulus generalisation that has been operantly conditioned.
- D. stimulus discrimination that has been operantly conditioned.

Question 16

Which options rely on consequences to influence Ivan's future behaviour?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Question 17

In the 'Little Albert' experiment, Watson and Rayner initially exposed Albert to a series of objects to observe his reaction. Albert demonstrated no fear when exposed to fire.

Which one of the following describes the role of fire in Albert's classical conditioning?

- A. The fire was an unconditioned stimulus.
- B. The fire was a conditioned stimulus.
- C. Albert's reaction to the fire was neutral.
- D. Albert's reaction to the fire was an example of stimulus generalisation.

Use the following information to answer Questions 18–22.

Maya, a VCE Psychology student, created a memory experiment that she tested on two classes of Year 7 students. The research design for each class is as follows.

- Class A: The participants were shown the words in list A in the order shown below. Each word was individually presented on a large card at five-second intervals. The participants were then provided with the ten shuffled cards and asked to place them in the same order as they were initially given.
- Class B: Before being exposed to the words in list B, the participants were told they would be shown ten four-letter words. The words would be presented in alphabetical order on large, individual cards at five-second intervals, starting with a word beginning with the letter A, then a word beginning with the letter B, and so on until the tenth word beginning with the letter J. Following the presentation of the final word, the participants were required to write down as many of the words as they could remember, in any order.

Lists A and B are shown below.

List A

even	film	dive	hike	boat	kelp	jive	axle	goat	cent
------	------	------	------	------	------	------	------	------	------

List B

axle	boat	cent	dive	even	film	goal	hike	idea	jive
------	------	------	------	------	------	------	------	------	------

Question 18

Which retrieval method was used by class A?

- A. recognition
- B. relearning
- C. recall
- D. reconstruction

Question 19

Which retrieval method was used by class B?

- A. free recall
- B. serial recall
- C. recognition
- D. reconstruction

Question 20

The effect of using five-second intervals between the words for class A, as opposed to a shorter time interval between the words, would be most likely to

- A. reduce the primacy effect due to the limited duration of long-term memory.
- B. reduce the primacy effect due to the limited capacity of short-term memory.
- C. allow additional maintenance rehearsal of the words in short-term memory.
- D. increase the number of words that could be rehearsed in sensory memory.

Question 21

Maya predicted that that presenting the words in alphabetical order to class B, and informing class B of this order prior to the presentation, would result in a higher rate of retrieval in comparison to class A.

The use of the alphabetical ordering of the words for class B would

- A. increase the capacity of words stored in short-term memory.
- B. provide additional cues to assist with the retrieval process.
- C. increase the capacity of words stored in long-term memory.
- D. provide additional leading questions to assist with the retrieval process.

Question 22

Which one of the following extraneous variables was controlled in the research design used in the experiment?

- A. experimenter effect
- B. order effect
- C. participant-related variables
- D. non-standardised procedures

Question 23

Jo's elderly mother is showing an early indication of Alzheimer's disease.

Which one of the following would be the most likely symptom displayed by Jo's mother?

- A. loss of smell
- B. difficulty with speech production
- C. anterograde amnesia
- D. impaired procedural memory

Question 24

A research investigation by Demanet and Vaughan (1999) found that individuals who were deprived of periods of REM sleep tended to spend more time in REM sleep the next time they went to sleep.

Which one of the following theories is supported by this observation?

- A. the evolutionary theory of sleep
- B. the theory that sleep-wake patterns follow a circadian rhythm
- C. the restorative theory of sleep
- D. the theory that REM sleep is a vital period of brain inactivity that helps replenish the proteins used by the brain during the day

Question 25

Ultradian sleep rhythms tend to start with

- A. a hypnagogic state.
- B. REM sleep.
- C. light NREM sleep.
- D. deep NREM sleep.

Use the following information to answer Questions 26–30.

Pip is 18 years old and the manager of a 24-hour gymnasium.

At the start of February, Pip was scheduled to work the night shift from 10 pm to 6 am six nights each week for four consecutive weeks. Pip initially had no problems maintaining alertness during the first half of her shift, but experienced difficulties during the second half of her shift (2 am to 6 am). In the second half of her shift, Pip was temperamental with staff, forgetful of the location of her belongings and would occasionally lapse into a microsleep. She also found it difficult to fall asleep once she arrived home, even though her curtains were drawn to block out sunlight.

Pip was highly anxious about the massive sleep debt she was accumulating. She consistently only slept for around three to four hours per day and could not recall having any dreams. After enduring this for three weeks, Pip went to a general practitioner to help with her sleep deprivation.

Question 26

Which one of the following symptoms of sleep deprivation best describes Pip's temperamental attitude with her staff?

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

Question 27

During Pip's first three weeks of working the night shift, she was most likely suffering from

- A. a dyssomnia and parasomnia.
- B. a dyssomnia and circadian phase disorder.
- C. a parasomnia and circadian phase disorder.
- D. total sleep deprivation and a dyssomnia.

Question 28

The general practitioner suggested that Pip uses cognitive behavioural therapy (CBT) to help her deal with her insomnia.

In this case, Pip's CBT would start with

- A. behavioural therapy.
- B. cognitive therapy.
- C. the implementation of stimulus control therapy.
- D. a trial of bright light therapy.

Question 29

During the final week of Pip's scheduled night shifts, her general practitioner suggested the use of bright light therapy to help Pip maintain alertness during her shift and fall asleep shortly after the completion of her shift.

When should Pip expose herself to the high intensity light required by bright light therapy?

- A. in the morning, after her shift
- B. every two hours that she remains awake
- C. in the afternoon, before her shift
- D. in the middle of her shift when she normally starts to feel sleepy

Question 30

If Pip returns to working a day shift, what proportion of her sleep would consist of NREM sleep?

- A. 15–20%
- B. 25–30%
- C. 50–60%
- D. 75–80%

Question 31

A gender bias may exist at a co-educational school that has a student population who are 70% male.

Which one of the following methods would generate a proportionally representative sample?

- A. random
- B. stratified
- C. convenience
- D. matched-participants

Question 32

Which one of the following is a purposely induced altered state of consciousness?

- A. a drowsy state
- B. a meditative state
- C. a daydreaming episode
- D. REM sleep

Use the following information to answer Questions 33–36.

A pharmaceutical company sourced a research team to investigate the effect of codeine, which is used in pain relief medication, on cognition. The company is required to provide patients that are prescribed codeine with an informed warning about these effects as codeine is classified as a depressant. Using a matched-participants research design, 40 participants were recruited using a convenience sample and randomly allocated to a group that was administered with either codeine or a placebo drug. The researchers then measured the cognition of the two groups to determine the effects of codeine on cognition.

Question 33

Prior to the commencement of the study, the research team gathered data from past experiments relating to similar pain-relieving drugs.

This type of data is referred to as

- A. subjective data.
- B. valid data.
- C. secondary data.
- D. primary data.

Question 34

The research team wanted to present the data from the experiment in a manner that would identify any outliers or individual results that varied from the central tendency of the data.

Which one of the following would be most effective in this case?

- A. the mean
- B. the standard deviation
- C. a table
- D. a bar graph with a bar for each group of participants

Question 35

At which point in the experiment would the participants allocated to the placebo group need to be made aware that they received the placebo drug?

- A. prior to providing informed consent
- B. during the study, so they can exercise withdrawal rights
- C. during debriefing
- D. following the publication of the findings

Question 36

The pharmaceutical company considered undertaking a follow-up, cross-sectional study about the effect of codeine on cognition.

A cross-sectional study would enable the research team to

- A. eliminate participant-related variables.
- B. eliminate any experimenter effects.
- C. eliminate any confounding variables.
- D. generate a comparison of the effects of the drug on different age groups.

Use the following information to answer Questions 37–41.

Kwasi has worked for a building company for over five years. Last year, Kwasi suffered a serious workplace injury at a construction site. Immediately after the accident, he was confident that he would rapidly recover from the injury and return to work in a matter of weeks, as long as he followed a rigorous rehabilitation program.

Unfortunately, Kwasi's injury has kept him out of work for several months as he is unable to stand for long periods of time and needs to avoid lifting heavy objects. Kwasi repeatedly recalls the accident and thinks about how it could have been avoided. Kwasi's medical and living expenses are covered by work-injury compensation, so he does not have to worry about his financial situation. Despite this, he is concerned that he will not be able to work in construction again and will be a burden on his partner whom he lives with. These factors have contributed to a recent social withdrawal and difficulty sleeping.

Question 37

Kwasi repeatedly recalling the accident would be best classified as

- A. ruminating.
- B. a stigma.
- C. self-efficacy.
- D. catastrophic thinking.

Question 38

Kwasi's current behaviour demonstrates

- A. resilience.
- B. that he is suffering from a mental health problem exclusively affected by external factors.
- C. that he is suffering from a mental illness resulting from a combination of internal and external factors.
- D. that he is suffering from a disorganised attachment.

Question 39

Which one of the following is a perpetuating risk factor that will affect Kwasi's mental health?

- A. genetics
- B. poor sleep
- C. a disorganised attachment
- D. social support

Question 40

In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, Kwasi's initial evaluation of the significance of his injury was

- A. harm.
- B. a challenge.
- C. insignificant.
- D. that he had the resources to cope with his condition.

Question 41

Which one of the following is Kwasi experiencing regarding his inability to continue working in the construction industry?

- A. stress
- B. anxiety
- C. a phobia
- D. a memory bias

Question 42

Which row of the table best describes the use of an electroencephalograph (EEG) to construct consciousness?

	Measure	Response
A.	quantitative	physiological
B.	quantitative	psychological
C.	qualitative	physiological
D.	qualitative	psychological

Question 43

Using a sleep diary for a sleep research investigation would be best described as

- A. an objective form of primary data.
- B. an objective form of secondary data.
- C. a subjective form of primary data.
- D. a subjective form of secondary data.

Question 44

Which one of the following would occur at the lowest level of the continuum of consciousness?

- A. a caffeinated state
- B. a drowsy state
- C. a daydreaming episode
- D. REM sleep

Use the following information to answer Questions 45–49.

Kiyoshi and his family were walking in the shallow water at a beach near their holiday house when Kiyoshi stepped on the barb of a stingray. The barb pierced Kiyoshi's foot, causing him significant pain and trauma, and he had to be taken to hospital in an ambulance to have fragments of the broken barb removed from his foot. Kiyoshi then developed a phobia of the beach near his family's holiday house.

Several years after the ordeal, Kiyoshi still spent time with his family at the holiday house, but he would avoid going into the water at the beach because he would start to hyperventilate when he looked at the beach area.

Shortly after the event occurred, Kiyoshi's younger sister Momoko would consistently question her parents about the safety of the beach when they walked or swam in the area. Momoko's dad would always comfort her by saying 'I will protect you and look out for stingrays'. Over time, Momoko developed a phobia similar to Kiyoshi.

Question 45

Kiyoshi's phobia of the beach near his family's holiday house was precipitated through

- A. positive reinforcement.
- B. a cognitive bias.
- C. negative reinforcement.
- D. a specific environmental trigger.

Question 46

Momoko's phobia of the beach near her family's holiday house was precipitated through

- A. positive reinforcement.
- B. classical conditioning.
- C. negative reinforcement.
- D. a specific environmental trigger.

Question 47

Which one of the following has perpetuated Kiyoshi's phobia?

- A. positive reinforcement
- B. classical conditioning
- C. negative reinforcement
- D. an attentional bias

Question 48

Kiyoshi's hyperventilation would most likely result in

- A. a lack of oxygen in his body.
- B. an excessive amount of carbon dioxide in his brain.
- C. an inability to breathe.
- D. dizziness.

Question 49

Which one of the following most accurately describes Kiyoshi's phobia?

- A. adaptive
- B. rational
- C. persistent
- D. triggered by a broad range of stimuli

Question 50

Psychoeducation can be used by friends and family to support an individual with a mental health condition.

Psychoeducation is best suited to address the individual's

- A. disorganised attachment.
- B. poor response to medication.
- C. genetic vulnerability.
- D. impaired reasoning.

END OF SECTION A

SECTION B

Instructions for Section B

Answer all questions in the spaces provided.

Question 1 (7 marks)

Akmal was gardening in his backyard when he felt a sharp pain in his arm. He looked down and saw he had been stung by an insect. He could see the stinger was still in his arm and carefully removed it.

- a. Identify the type of response that Akmal experienced after being stung. 1 mark

- b. Outline the differences in the roles of the central and peripheral nervous systems in terms of Akmal sensing the sting and Akmal responding to the sting. 4 marks

Sensation of the sting _____

Response to the sting _____

- c. Outline the role of the axon and myelin sheath in the transmission of the pain signal in Akmal's arm. 2 marks

Question 2 (10 marks)

Vinny met his partner Anastasia while she was studying at university in Australia on a student visa. They had been living together for over a year and were planning to get married after Anastasia's graduation. Due to a complication with the university, Anastasia was abruptly expelled and, because of the requirements of her student visa, deported back to her home country.

Vinny was initially in shock after Anastasia's deportation as he formed a belief that she would be permanently banned from returning to Australia. Upon further investigation, he found that Anastasia could gain residency in Australia if they were married. However, this process would take several months, during which they would be forced to remain in their respective countries.

- a.** In terms of both primary and secondary appraisals for Lazarus and Folkman's Transactional Model of Stress and Coping, explain how Vinny may have made a reappraisal of the news of Anastasia being deported. 4 marks

- b.** In terms of sources of stress, explain how Anastasia's deportation could be both a life event and a source of daily pressures for Vinny. 4 marks

- c.** Explain how a higher level of cortisol being released into Vinny's bloodstream would help his response to the stressor. 2 marks

Question 4 (8 marks)

Loftus (2003) and other researchers have conducted experiments to investigate the fallibility of memory. In one such experiment, a group of participants were deceived in terms of the purpose of the experiment and then shown a series of photographs of themselves. The photographs were edited to make it appear as though the participant went on a hot air balloon ride with a parent or guardian when the participant was a child, though in reality the event did not happen. A week later, the participants were asked if they could remember any details of the hot air balloon ride. Approximately half of the participants could recall the event.

- a.** In terms of Loftus’s theory of the reconstructive nature of the memory, explain how the participants reported the false memory of their hot air balloon ride. 3 marks

- b.** Identify and explain the roles of **two** brain structures in the reconstruction of the memory of the hot air balloon ride. 4 marks

Structure 1 _____

Structure 2 _____

- c.** Identify a suitable dependent variable for this experiment. 1 mark

Question 5 (10 marks)

A group of individuals aged between 15 and 17 years were prescribed with a powerful brand of benzodiazepine, a medication which acts as a depressant to treat anxiety disorders. Some psychiatrists believe benzodiazepine can trigger cognitive distortions.

The group was recruited by a team of researchers as a sample group for an experiment. The experiment required the participants to cease taking any existing medication for one week prior to the day of testing. The experiment used both benzodiazepine and placebo treatments. To determine the cognitive effects of benzodiazepine compared to the placebo, the researchers utilised an electroencephalograph (EEG) and a series of cognition tests to determine the cognitive effects.

- a.** Using an example, explain how the researchers could test the participants for a cognitive distortion while they were under the influence of benzodiazepine. 2 marks

- b.** Explain how the EEG readings from a participant who has consumed a placebo and a participant who has consumed benzodiazepine would differ. 2 marks

- c.** Explain how the use of placebo treatments may create an ethical conflict in obtaining informed consent from the participants. 2 marks

- d.** Explain how the ethical principle of beneficence could be applied to this experiment. 2 marks

- e.** Evaluate the validity of the use of an EEG to measure the cognition of the participants. 2 marks

Question 6 (8 marks)

In 2021, Juanita was selected to run the marathon event at the Tokyo Olympics. She spent a month in a Spanish altitude training camp and ran approximately 200 kilometres each week. She then travelled to Tokyo one week before her race. There was a seven-hour time difference between Spain and Tokyo. This meant that Juanita's 10 pm bedtime in Spain would occur at 5 am in Tokyo.

Juanita was mindful that she would temporarily suffer from a circadian phase disorder when she arrived in Tokyo, so she used bright light therapy during the week leading up to the marathon event to help her body prepare for the race.

- a.** In terms of the restorative theory of sleep, explain how Juanita's ultradian sleep cycles differ from an average person of a similar age, given her heavy endurance-based training. Justify your answer. 2 marks

- b.** Explain the cause and effect of Juanita's anticipated circadian phase disorder when she arrived in Tokyo. 2 marks

- c.** With reference to the relevant brain structures, glands and sleep-inducing hormones, explain how bright light therapy would have been implemented in treating Juanita's temporary circadian phase disorder in the week leading up to her race. 4 marks

Question 7 (11 marks)

After experiencing a lengthy period of home isolation, Yijun became anxious about being in public and around other people. Consequently, he became withdrawn and reluctant to leave his house, which had a negative impact on his mental health. Yijun has a good diet and regularly exercises by participating in a daily Pilates class that is run remotely. He suffers from a disorganised attachment but does feel a connection to the members of his Pilates class with whom he interacts online. Yijun has difficulty falling asleep as he often thinks about some of unpleasant face-to-face experiences he has had with people in the past.

- a.** Identify and describe **one** characteristic that indicates Yijun may be a mentally healthy person despite the evidence of many risk factors. 2 marks

Characteristic _____

Explanation _____

- b.** In terms of the biopsychosocial model of mental health, evaluate Yijun’s cumulative risk of developing a mental disorder. 3 marks

- c.** Explain how stigma could perpetuate Yijun’s social anxiety disorder. 2 marks

- d.** Yijun sought the help of psychologist and has been working with them for over a year.
In terms of the transtheoretical model for behavioural change, describe how Yijun reached the action stage and the maintenance stage. 2 marks

Action stage _____

Maintenance stage _____

- e.** Explain how Yijun's Pilates exercise would enhance his resilience. 2 marks

Question 8 (10 marks)

Researchers at Sommerville University received funding to investigate the effects of alcohol versus sleep deprivation on academic performance. For their study, the researchers decided to mimic the research of Dawson and Lamond (1999) and Dawson and Reid (2001), which used a convenience sample of undergraduate Mathematics students aged 18 to 20 and a repeated-measures design. The participants from Sommerville University were asked to solve a series of mathematical tests over three consecutive Sundays, with each day of testing representing a different condition that was being studied.

The researchers at Sommerville University conducted their study as follows.

- **Day 1 (Sunday 13 June):**

Participants were instructed to arrive at Sommerville University at 12 pm and ensure that they had slept for at least 7 hours the night before and had not consumed any alcoholic beverages. Participants then undertook two Mathematics General Achievement Tests that lasted for 15 minutes each, with a 30-minute break between each test. The tests focused on mathematical skill and speed.

- **Day 2 (Saturday 19 to Sunday 20 June)**

On Saturday, participants were instructed to wake up at around 9 am and arrive at Sommerville University at 9 pm. They then undertook a 15-minute Mathematics test every two hours from 9 pm on Saturday until 1 pm on Sunday. Participants were not allowed to leave the university campus or sleep between tests, and were encouraged to socialise with the other participants.

- **Day 3 (Sunday 27 June)**

Participants were given the same instructions as for day 1. However, after arriving, they consumed a series of alcoholic beverages and had their blood-alcohol concentration (BAC) levels measured at regular intervals. When participants reached BAC readings of 0.02, 0.04, 0.06, 0.08 and 0.10, they completed a 15-minute Mathematics test.

It was hypothesised that, when undertaking a series of mathematical tests, the 18- to 20-year-old undergraduate students would demonstrate similarly impaired levels of mathematical ability and speed while they were sleep-deprived by 17 to 28 hours and while they had a BAC that ranged from 0.04 to 0.10; this would be compared to the mathematical ability and speed they demonstrated with adequate sleep and a BAC of 0.00.

The scores for each test were based on a combination of the accuracy of the participants' responses and their relative speed in completing the tests. An extract from the results appears in the tables below.

Day 1	
Test score (%)	89.7

Day 2				
Number of hours without sleep	17	20	24	28
Test score (%)	88.5	86.2	72.4	49.3

Day 3				
BAC level	0.04	0.06	0.08	0.10
Test score (%)	68.9	61.2	52.2	43.2

