

YEAR 12 *Trial Exam Paper* 2023

PSYCHOLOGY

Written examination

Reading time: 15 minutes

Writing time: 2 hours 30 minutes

STUDENT NAME:

QUESTION AND ANSWER BOOK

Structure of book

<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	8	8	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 book of 29 pages
- Answer sheet for multiple-choice questions
- Additional space is available at the end of the book if you need extra space to complete an answer.

Instructions

- Write your **name** in the space provided above on this page and on the multiple-choice answer sheet.
- 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 book.

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

Which of the following describes a key role of the neuromodulator serotonin?

- A. It excites pre-synaptic neurons.
- B. It stabilises mood.
- C. It coordinates voluntary movement.
- D. It increases reward sensitivity.

Use the following information to answer Questions 2–5.

Jenny is riding her bike home from school. She rides on the main road because it is a quicker route to her home, even though there are many cars. As she approaches an intersection, a car moves in front of her, cutting her off dangerously. Jenny instinctively swerves away from the car and onto the footpath.

Question 2

Jenny's act of swerving can be described as

- A. an unconscious reflex response initiated by the central nervous system.
- B. a conscious reflex response initiated by the central nervous system.
- C. an unconscious reflex response initiated by the peripheral nervous system.
- D. a conscious reflex response initiated by the peripheral nervous system.

Question 3

During this event, Jenny experiences symptoms associated with Selye's General Adaptation Syndrome.

When she realises the car is heading towards her, which of the following is Jenny likely to experience first?

- A. An increase in cortisol levels.
- B. A decrease in dopamine levels.
- C. A decrease in adrenaline levels.
- D. A decrease in blood pressure levels.

Question 4

For Jenny, the car cutting in front of her represents

- A. an acute external stressor.
- B. an acute internal stressor.
- C. a chronic internal stressor.
- D. a chronic external stressor.

Question 5

Jenny worries that cars may cut in front of her if she travels on the busy road again in future, and cause her to fall and hurt herself. The next day she decides to take a different route home, along side streets.

Which of the following explains why Jenny's response does not indicate a specific phobia?

- A. A fear of cars is an irrational fear.
- B. A change in her route is an avoidance behaviour.
- C. Her response is a rational decision to a real concern.
- D. She was not emotionally affected by the incident with the car.

Question 6

Which of the following is a correct statement about the gut–brain axis?

- A. The vagus nerve sends information bidirectionally between the brain and the gut.
- B. The somatic nervous system sends information from the brain to the gut to alter digestion.
- C. The enteric nervous system is a subdivision of the central nervous system.
- D. The gut–brain axis is only involved in physiological processes and does not affect cognition.

Use the following information to answer Questions 7 and 8.

Sophie keeps a pet snake. When her friend Jared first visits her house, he jumps and runs out of the room when he sees the snake slithering towards him. When Sophie checks on Jared, she can see he is feeling quite stressed.

Question 7

Which of the following paired options correctly identifies Jared's physical symptoms and the stage of General Adaptation Syndrome he is currently in?

	Symptoms	General Adaptation Syndrome stage
A.	decreased heart rate; increased adrenaline release	resistance
B.	increased heart rate; inhibited digestion	alarm reaction – countershock
C.	inhibited digestion; inhibited sweating	alarm reaction – shock
D.	increased heart rate; increased respiration rate	exhaustion

Question 8

Which nervous system subdivision(s) most likely dominated when Jared ran out of the room?

- A.** sympathetic nervous system, which triggered the freeze response
- B.** sympathetic nervous system, which triggered the flight response
- C.** parasympathetic nervous system, which triggered the flight response
- D.** sympathetic and parasympathetic systems equally, which triggered the freeze response

Use the following information to answer Questions 9 and 10.

Jai is a healthy six-year-old boy who is practising his reading skills with his uncle, Chris. As Jai reads his book, Chris helps him sound out some of the words. Jai practises sounding out the words until he is successful, and then rereads the book by himself. After successfully reading two books from Jai's school reading list, Jai and Chris celebrate Jai's success with an ice cream.

Question 9

The process of Jai sounding out the words until he can read them successfully involves

- A.** long-term depression, and the memories of the words are stored in the neocortex.
- B.** long-term potentiation, and the memories of the words are stored in the neocortex.
- C.** long-term depression, and the memories of the words are encoded by the amygdala.
- D.** long-term potentiation, and the memories of the words are encoded by the amygdala.

Question 10

In relation to Jai, which of the following statements is correct regarding the role of ice cream in this situation?

- A. Ice cream is a conditioned stimulus that leads to a conditioned response of reading practice.
- B. Ice cream is an antecedent that results in a behaviour of reading practice.
- C. Ice cream acts as positive reinforcement of Jai's reading practice, which will increase the likelihood that he will read in future.
- D. Ice cream acts as negative reinforcement of Jai's reading practice because it takes away his hunger and increases the likelihood that he will read in future.

Question 11

Which of the following is a valid example of multimodal learning for Aboriginal and Torres Strait Islander Peoples?

- A. Knowing how to play a sport requires not only knowing the rules of the sport, but also having the physical skills to succeed.
- B. Knowledge can be transferred across several generations through storytelling and song.
- C. Learning how to make a meal is connected to knowledge of plants and animals, how to forage or hunt for them, and the land from which they come.
- D. Learning a dance requires visualising the steps and explicitly recalling their sequence.

Use the following information to answer Questions 12–15.

Drivers of 'black cab' taxis in London must memorise a list of about 25,000 street names so that they can drive passengers to their destinations quickly and efficiently.

Yen and Lilly are visitors from Melbourne who hail a black cab taxi at King's Cross Station and ask to be taken to Buckingham Palace. The cab driver narrates the route as they drive, naming each of the streets he is about to turn onto. He drives along eight streets during the journey.

Yen cannot wait to get to the palace, excitedly recounting the time she saw some of the royal family visiting Melbourne.

Question 12

The cab driver's ability to name each of the streets he is about to turn onto is an example of which type of memory?

- A. explicit–episodic
- B. explicit–semantic
- C. implicit–classical conditioning
- D. autobiographical

Question 13

Which two structures would have been involved in the encoding of Yen's memory of the royal family visiting Melbourne?

- A. neocortex and amygdala
- B. neocortex and cerebellum
- C. cerebellum and hippocampus
- D. hippocampus and amygdala

Question 14

Lilly concentrates on the streets that the cab driver is listing as they drive. She repeats them to herself, so they can walk back to their hotel, but finds herself distracted by Yen's story.

Which of the following reasons best describes why Lilly is unable to recall the street names despite repeating them to herself?

- A. The duration of her short-term memory has been exceeded.
- B. The capacity of her short-term memory has been exceeded.
- C. Retrieval of the names from her long-term memory has failed.
- D. The names remain in her sensory memory.

Question 15

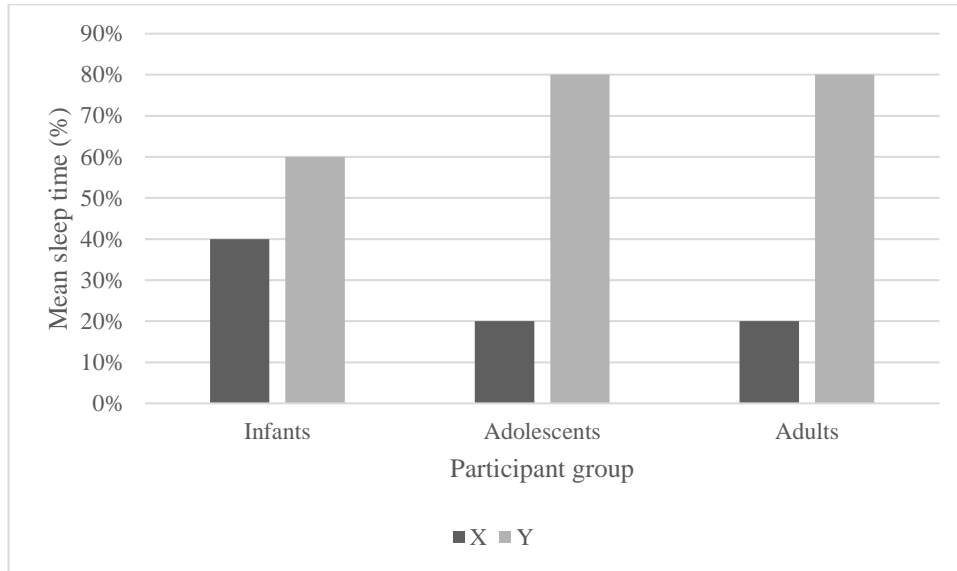
When they arrive at Buckingham Palace, the friends watch the guards on parade and joke with each other as they mimic the marching steps of the guards.

Which stage of observational learning is responsible for their ability to mimic the marching of the guards?

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

Use the following information to answer Questions 16–19.

Dr Chakravarti conducted a sleep study involving participants grouped by age. As part of the study, she collected data on the sleeping patterns of her participants. Data for some of the study participants, in two different states (X and Y), is presented in the graph below.



Question 16

Based on the graph of sleep data, what are the most likely identities of the states labelled X and Y?

	X	Y
A.	REM sleep	NREM sleep
B.	NREM sleep	REM sleep
C.	NREM Stage 3	NREM Stage 2
D.	normal waking consciousness	altered state of consciousness

Question 17

How is Dr Chakravarti likely to have collected this data?

- A. qualitatively, using sleep diaries
- B. quantitatively, using video monitoring
- C. qualitatively, using electroencephalography and electromyography
- D. quantitatively, using electroencephalography and electro-oculography

Question 18

What is one other difference between the sleeping patterns of adults and infants?

- A. Infants have less total NREM sleep time than adults.
- B. Adults have deeper sleep than infants.
- C. Infants have a more regulated release of melatonin than adults.
- D. Adults have less NREM stage 3 sleep (by total time) than infants.

Question 19

Which of the following statements explains a difference in the sleeping patterns of adults and adolescents?

- A. Adolescents have a delayed release of melatonin compared to adults.
- B. Adolescents have greater social pressures than adults.
- C. Adults are more susceptible to the effects of blue light than adolescents.
- D. Adults need a lower proportion of REM sleep than adolescents.

Question 20

An electro-oculograph measures

- A. movement of the eyes during sleep.
- B. electrical activity of muscles that control the eyes during sleep.
- C. overall electrical activity of muscles in the body during sleep.
- D. electrical activity of the occipital lobe of the brain during sleep.

Question 21

Deduce which of the following paired options shows an ultradian rhythm and a circadian rhythm.

	Ultradian	Circadian
A.	sleep cycle	sleep–wake cycle
B.	sleep–wake cycle	zeitgeber
C.	sleep–wake cycle	sleep cycle
D.	zeitgeber	sleep–wake cycle

Question 22

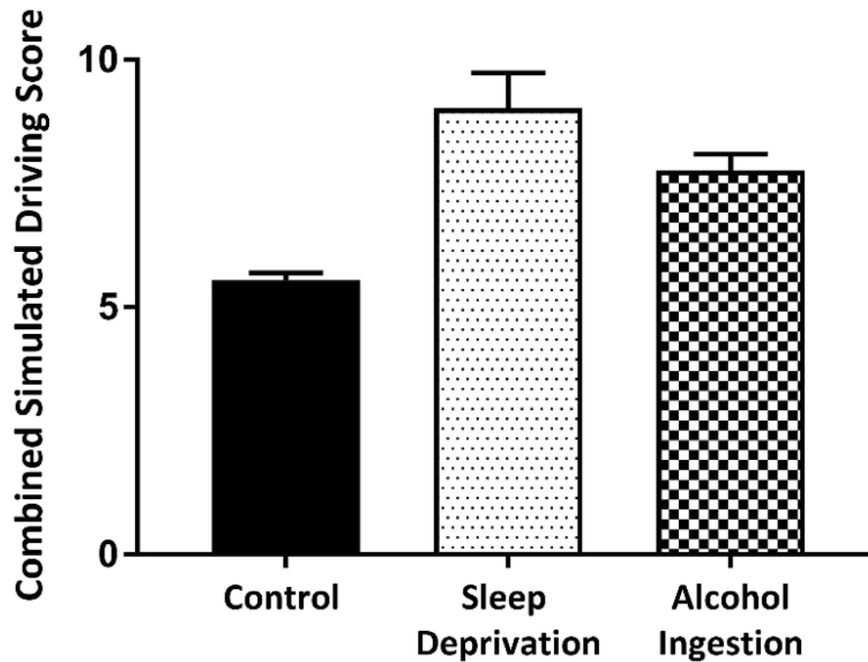
Which of the following paired options is correct in relation to behavioural and cognitive effects of partial sleep deprivation?

	Behavioural	Cognitive
A.	high ability to concentrate	inability to make sound decisions
B.	slowed reaction times	reduced attention span
C.	reduced coordination	increased irritability
D.	increased irritability	difficulties with focus

Use the following information to answer Questions 23–25.

Lowrie and Brownlow (2020) studied the relative impact of sleep deprivation and alcohol on driving. They tested 30 participants in three conditions: fully rested, sleep-deprived (24 hours of wakefulness) and alcohol-intoxicated (blood alcohol concentration of about 0.05%). All participants completed all three conditions.

During simulated driving tests, participants were scored using a range of different measures, and the combined simulated driving scores are shown in the graph below. Scores increase with level of driving impairment.



Source: 'The impact of sleep deprivation and alcohol on driving: a comparative study' by J. Lowrie and H. Brownlow, *BMC Public Health*, 2020, 20, 980, <https://doi.org/10.1186/s12889-020-09095-5>

Question 23

Which of the following statements is valid based on the results shown in the graph?

- A. Control participants perform worse on a driving test than participants who are sleep-deprived or alcohol-intoxicated.
- B. The effect of partial sleep deprivation is greater than the impact of a blood alcohol concentration of 0.05%.
- C. The effect of a blood alcohol concentration of 0.05% is greater than that of a full night of sleep deprivation.
- D. The effect of a full night of sleep deprivation is greater than the effect of a blood alcohol concentration of 0.05%.

Question 24

Which of the following statements correctly describes the most likely effects for each of the experimental group conditions?

- A. Participants in the control group have no negative effects on their driving skills.
- B. Participants are likely to have negative effects on mood and reaction times in the sleep deprivation condition, and negative effects on concentration only in the alcohol intoxication condition.
- C. Participants are likely to have the same types of negative effect on mood, reaction times and concentration levels in the sleep deprivation and alcohol intoxication conditions.
- D. Participants in the alcohol intoxication condition have positive effects on mood only, while in the sleep deprivation condition they have negative effects on reaction times and concentration levels.

Question 25

Which of the following descriptions is appropriate for this study?

- A. a literature review with a summary of three different studies
- B. a controlled experiment that uses a between-subjects design
- C. a controlled experiment that uses a within-subjects design
- D. an observational study of real-life driving conditions

Question 26

Which of the following is a likely cause of an advanced sleep-phase disorder?

- A. adolescence
- B. shift work that requires waking at 3 am
- C. bright-light therapy
- D. changes in seasonal zeitgebers (sunrise and sunset times)

Question 27

Which of the following paired options is correct in terms of the relationship between light levels and the signals sent from the suprachiasmatic nucleus to the pineal gland?

	High light levels	Low light levels
A.	promote release of cortisol	promote release of melatonin
B.	promote release of melatonin	promote release of cortisol
C.	inhibit release of adrenaline	promote release of melatonin
D.	promote release of cortisol	inhibit release of melatonin

Question 28

Which of the following shows a set of characteristics that reflects a state of mental wellbeing?

- A. independence, ability to cope with change and challenge, good social connections
- B. completing daily tasks, positive resilience, experiencing chronic stress
- C. unhelpful coping strategies, setting future goals, strong social support
- D. good personal hygiene, feelings of isolation, inability to adapt to change

Question 29

Which of the following paired options correctly shows internal and external factors influencing mental wellbeing?

	Internal factors	External factors
A.	spending two weeks in hospital after a burst appendix	not getting enough hydration
B.	upcoming exams	planning for a year 12 formal
C.	Australia finishing ninth in the Eurovision Song Contest	starting puberty
D.	worrying about your health	experiencing the loss of a loved one

Question 30

Which of the following could be categorised as a determinant of social and emotional wellbeing in Aboriginal and Torres Strait Islander communities?

- A. connection to Country
- B. right to self-determination
- C. spirituality
- D. connection to family and kinship

Question 31

The social and emotional wellbeing framework for Aboriginal and Torres Strait Islander peoples can best be described as

- A. multidimensional and holistic components of mental, spiritual and social needs.
- B. multidimensionally linked solely to community and Country.
- C. holistically linked to self and others.
- D. driven by social, political and historical determinants of wellbeing.

Question 32

Which of the following is a psychological strategy that can be used to maintain wellbeing?

- A. seeking support from family and friends
- B. getting adequate sleep
- C. having adequate hydration
- D. regular mindfulness meditation

Question 33

What is one way that eating a balanced diet can support mental wellbeing?

- A. Adequate nutritional intake aids bidirectional activity of the gut–brain axis.
- B. Affective, behavioural and cognitive processes can improve food intake.
- C. Feeling satisfied with food intake leads to psychological health.
- D. It can reduce the need for sleep.

Use the following information to answer Questions 34–36.

Mads is feeling severely anxious about their Indonesian class because they have struggled with learning the vocabulary and find their teacher very strict. They are certain that, if they go to class, their teacher will yell at them in front of everyone, because that is what happened last week. Mads goes to the health centre instead of going to class.

When Mads' coordinator speaks to the Indonesian teacher, the teacher is very surprised. She did not yell at Mads, but held them back after class to speak to them about what she perceived as a limited effort.

Question 34

Which of the following best explains the differing recollections of Mads and their teacher?

- A. Mads is a teenager who is deliberately trying to get their teacher in trouble.
- B. Mads is trying to use a context-specific coping strategy.
- C. Memory bias is leading Mads to focus on certain parts of the interaction.
- D. The Indonesian class is a specific environmental trigger for Mads.

Question 35

Mads' belief that the teacher will yell at them in front of everyone, when the teacher is unlikely to do this, can best be classified as

- A. memory bias.
- B. a specific environmental trigger.
- C. long-term potentiation.
- D. catastrophic thinking.

Question 36

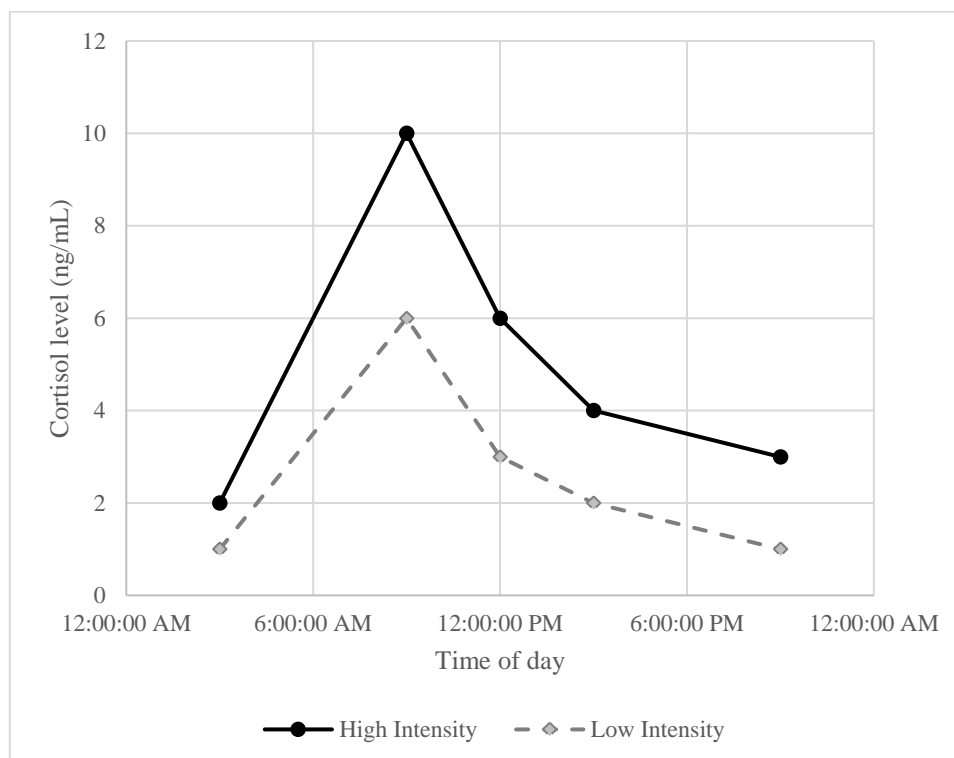
Which of the following best explains Mads' strategy of going to the health centre rather than going to class?

- A. This is an approach strategy that has high context-specific effectiveness and will permanently reduce anxiety.
- B. This is an avoidance strategy that risks perpetuating Mads' fear of the classroom and promoting further avoidance.
- C. This is an approach strategy that works to challenge Mads' unrealistic thinking by allowing them a break from class to reset.
- D. This is an avoidance strategy that shows high coping flexibility because it involves using the most appropriate method to reduce Mads' ongoing anxiety about class.

Use the following information to answer Questions 37–40.

Dr Henderson is interested in studying how long-term levels of stress hormones are correlated with the experience of chronic stress. She contacts the Australian Institute of Sport, which recommends 10 high-performance gymnasts with institute scholarships to participate in her study. Cortisol levels in blood samples from the gymnasts are measured using a testing apparatus calibrated against a known cortisol sample. The gymnasts score themselves, using a self-reported Perceived Stress Scale, during a high work-intensity phase (before and during an international competition) and in a low work-intensity phase (recovery period after competition).

The results of the study are shown in the graph below. The Perceived Stress Scale scores show that participants reported feeling more stressed during the high-intensity period than during the low-intensity period.



Question 37

Why is this study best described as a correlational study?

- A. There is no active manipulation of an independent variable, so no cause-and-effect relationship can be established.
- B. More than one dependent variable has been measured.
- C. Participants have been tested under two different conditions using a range of different methods for the investigation.
- D. A small group of participants has been tested in a real-world situation.

Question 38

Dr Henderson's graph shows a mean of the 10 gymnasts' cortisol levels. Looking at her raw data, she can see that the cortisol levels at 6 am vary from as low as 2 ng/mL to as high as 14 ng/mL.

This suggests that the measured cortisol levels have

- A. high accuracy and high precision.
- B. low accuracy and high precision.
- C. high accuracy and low precision.
- D. low accuracy and low precision.

Question 39

Which of the following statements is appropriate for the validity of Dr Henderson's experiment?

- A. The results show high internal validity: the measurements are accurate and the true value of cortisol levels has been measured.
- B. The results show high external validity: they can be clearly applied to a broader population of all individuals.
- C. The results show low internal validity: they are repeatable and reproducible.
- D. The results show low external validity: they do not measure a correlation between stress and cortisol levels.

Question 40

Which of the following ethical considerations is appropriate for this study?

- A. informed consent because all participants have given permission to be involved in the study
- B. non-maleficence because the study is unlikely to harm participants
- C. justice, through the careful reporting of the results of both conditions
- D. beneficence because the study has been conducted in a way that is maximally beneficial to participants

PLEASE TURN OVER

SECTION B**Instructions for Section B**

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

Question 1 (4 marks)

Outline how an electroencephalograph and video monitoring would help a sleep researcher determine whether a person was in REM sleep or NREM Stage 3 sleep.

Sleep stage	Measure	
	Electroencephalograph	Video monitoring
REM		
NREM Stage 3		

Question 2 (15 marks)

Clara is a four-year-old child who has become very scared of flowers after an experience at her cousin's party. At the party, a clown repeatedly squirted her in the face with a trick flower while her mother was not there. Now, Clara reflexively throws her hand in front of her face when she sees a flower, starts to cry and runs to her mother for comfort.

Clara's mother takes her to a psychologist because she does not know how to help Clara. She explains to the psychologist that Clara has always been an anxious child who worries when away from her mother, but this is the worst anxiety she has seen. The psychologist explains that Clara has developed a specific phobia of flowers, and that this is different from anxiety.

- a.** Distinguish between anxiety and phobia with reference to Clara.

2 marks

- b.** Use the language of classical conditioning to outline how Clara acquired her specific phobia of flowers.

4 marks

- c.** Discuss the role of a specific neurotransmitter as a biological factor in Clara’s development of this phobia, and the effectiveness of an associated biological intervention.

6 marks

- d. The psychologist recommends systematic desensitisation for Clara.
Describe the process of systematic desensitisation.

3 marks

Question 3 (15 marks)

Ahmed wanted to understand the impact of different mnemonics on human memory for his Psychology investigation. He designed a study in which three groups of participants used different methods to memorise the surnames of 20 players in his local Australian rules football club, the Rowville Tigers. Groups 1 and 2 included Ahmed's friends from school, and Group 3 included his friends from the Rowville Tigers.

Below is a section of his research poster:

Hypothesis: Individuals who use a mnemonic will recall a greater number of names than those who do not use a mnemonic
Group 1: Make a phrase that includes the first letter of player surnames
Group 2: Make a word that includes the first letter of player surnames
Group 3: Use simple repetition of player surnames

Each group was given the same written list of 20 player surnames, and they then had three minutes to memorise the list using the instructed method for their group. After 30 minutes, each participant was taken aside and their recall tested. Participants spoke the surnames aloud, along with the mnemonic.

The results are as follows:

Group	Mean score of names recalled
1	54%
2	56%
3	67%

- a.** Identify the mnemonic tested in each of groups 1 and 2.

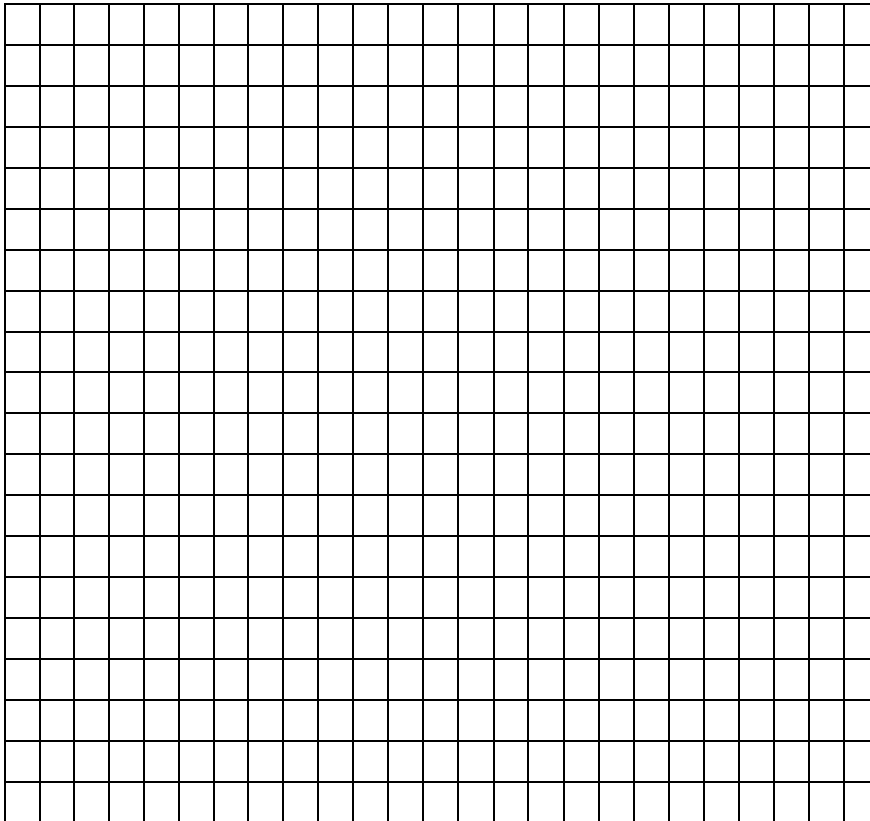
2 marks

- b.** What is the purpose of Group 3 in this study?

1 mark

- c.** Sketch an appropriate graphical representation of Ahmed's results. Ensure that each axis is labelled correctly.

3 marks



- d.** Evaluate whether Ahmed's hypothesis is supported by the data.

2 marks

- e. i. Analyse how a likely confounding variable from the scenario would impact the reproducibility and validity of Ahmed’s results.

4 marks

- e. ii. Suggest how Ahmed could alter the methodology of his study to control for this confounding variable in future.

1 mark

- f. Explain why the mnemonics used in groups 1 and 2 would be more challenging to use if Ahmed only shared the names verbally with participants, rather than providing a written list.

2 marks

Question 4 (5 marks)

- a.** Explain why an individual with aphantasia may be unable to effectively use the method of loci.

3 marks

- b.** Name a memory technique used in oral traditions and describe one way it is different from the method of loci.

2 marks

Question 5 (12 marks)

Alison is a proud Yorta Yorta woman through her mother and grandmother, who have ensured that she has been connected to her Aboriginal culture throughout her life. Alison is very worried about her grandmother, Yvonne, who is 80 and experiencing the early stages of Alzheimer's disease. Yvonne is doing okay now, but Alison knows it will become very difficult when Yvonne's memory deteriorates further and she needs a higher level of care. Alison starts to plan with her mother and aunties how they might arrange the right care for Yvonne as the disease progresses.

Yvonne does not talk much about the future. When Alison asks her how she feels about her Alzheimer's diagnosis, Yvonne always says, 'I can't worry about the future, young one; I just deal with it when it gets to me. It'll be just as important then as it is now. You just remember what I taught you and always remember that I love you.'

- a.** Outline both Alison's and Yvonne's likely primary appraisals of Yvonne's diagnosis, and discuss how this will impact secondary appraisal for each woman.

5 marks

- b.** Explain how cultural continuity may help Alison maintain her wellbeing through this situation.

2 marks

- c.** Alison discusses with Yvonne’s doctor whether Yvonne should take part in a clinical trial of a new Alzheimer’s medication.

Outline how the doctor could ensure informed consent is met if Yvonne takes part.

3 marks

- d.** Describe one specific biological change occurring in Yvonne’s brain and outline how it explains why Yvonne ‘can’t worry about her future’ or imagine future scenarios.

2 marks

Question 6 (7 marks)

Harriet was an IT manager at a large company. When COVID struck in 2020, her company's IT infrastructure needed to be updated to enable everyone to work from home. As well as the additional workload of organising devices, connections and programs, Harriet had to deal with more issues due to the different devices and locations being used.

Harriet did not feel very supported during this time because her company did not hire any additional IT employees. Three years on, Harriet's doctor diagnosed her with a stress-related heart condition. She felt that she had to resign from her job because she could not face the pressure anymore. The final straw for her was the company compulsorily signing her up for a workplace time-and-motion survey. As part of this, Harriet would have had to respond to a series of questionnaires and be observed at work, to track her productivity.

Harriet feels that she coped with her job for so long because of the strong support of her partner. He looked after their children and put up with the many late nights she spent at work, while making sure that they still had date nights as a couple and fun times as a family.

- a.** With reference to the scenario and the long-term impact of cortisol when experiencing chronic stress, assess which stage of the General Adaptation Syndrome that Harriet is currently in. Justify your response.

4 marks

- b.** State the protective factor that is evident for Harriet in the scenario.

1 mark

- c.** For the time-and-motion survey, identify the scientific investigation methodology used and outline one ethical guideline that the researchers should have ensured was followed.

2 marks

Question 7 (12 marks)

Lachlan is trying to teach his son, Jason, to help out at dinnertime. Jason's responsibilities are to clear and set the table, and sometimes to help with food preparation. However, Jason is resistant and often refuses to complete the tasks he is assigned. Lachlan gets furious when this happens, and threatens to punish him.

Jason complains that he does not know how to do what he is being asked to do. Lachlan's partner, Sarah, suggests that they may have more success by encouraging Jason to observe them working together in the kitchen, and then use some form of reward to motivate Jason to help out more.

After Jason has observed Sarah and Lachlan in the kitchen, Sarah invites Jason to make some cookies with her. They do this together, and Sarah teaches him how to do things such as measuring and mixing the ingredients. Afterwards, Jason says he wants to do more cooking, and he gradually gets more involved in the kitchen.

- a.** Outline how Lachlan may have used negative punishment to change Jason's behaviour in response to the antecedent of being asked to help with dinner.

3 marks

- b.** Explain the role of dopamine as a neuromodulator in facilitating Jason's learning of the cooking skills.

2 marks

- c. Outline the roles of one brain structure in the formation of Jason’s implicit–procedural cooking skills.

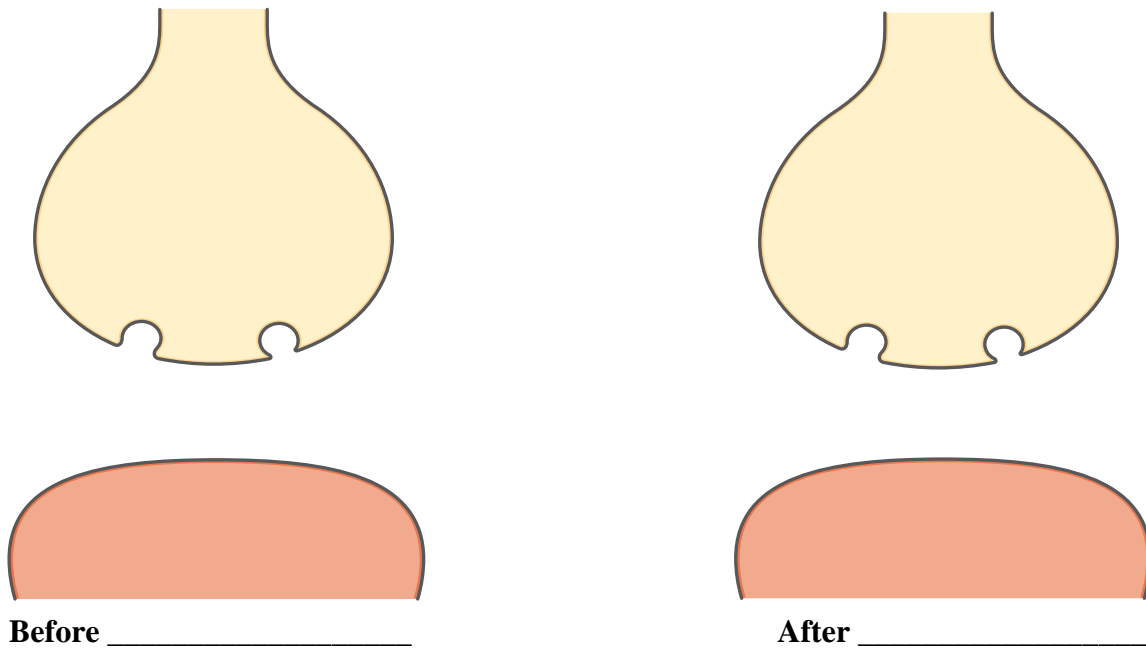
2 marks

- d. Describe how Jason could demonstrate the process of attention to help learn a new cooking skill in this situation.

1 mark

- e. As Jason practises his new cooking skills, synaptic plasticity will occur within neural pathways in his brain. Complete the captions and annotate the synaptic diagrams below to identify and explain the specific plasticity process. Include at least one structural and one functional change that will occur as he learns.

4 marks



Source: Servier Medical Art. https://smart.servier.com/smart_image/synapse-2

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Question 8 (10 marks)

The importance of sleep for adolescents is well discussed in schools, the media, and by families and governments. The following text and figures are from a VicHealth summary report prepared for the Victorian Government in 2018.

Like most physiological functions, the length and quality of sleep are influenced by a host of biological, environmental and lifestyle factors. Across all age groups, poor sleeping patterns have been linked to poorer current and future mental health.

In 2018, VicHealth commissioned the Sleep Health Foundation to conduct a rapid review of recent research in the areas of:

- population-level sleep patterns
- the evidence for how these patterns affect mental wellbeing
- the role of lifestyle factors in sleep disturbances
- effective behavioural interventions to improve sleep in young people.

The review related to Australian and state populations in general, but where possible attempted to draw out specific evidence and conclusions relevant to young people (adolescents and young adults between the ages of 12 and 25).

The report focused on behavioural factors, rather than genetic pre-dispositions or pharmacological interventions, because these are able to be altered by individuals. This means practical information can be provided to young people and their families, other caregivers (including teachers), health professionals and policymakers.

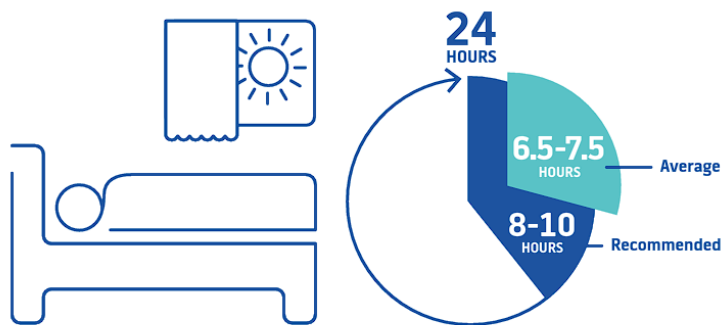


Figure 1: Results from Victorian and South Australian self-report surveys on sleep duration among adolescents on school nights.

Figure 2: Results from a South Australian study where, after a week of baseline study, adolescents were required to stop using their phone one hour before their 'bedtime'.



