

VCE Psychology Unit 3

Written Examination

Suggested Solutions

SECTION A – MULTIPLE-CHOICE QUESTIONS

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D
11	A	B	C	D
12	A	B	C	D
13	A	B	C	D
14	A	B	C	D
15	A	B	C	D
16	A	B	C	D
17	A	B	C	D
18	A	B	C	D
19	A	B	C	D
20	A	B	C	D

21	A	B	C	D
22	A	B	C	D
23	A	B	C	D
24	A	B	C	D
25	A	B	C	D
26	A	B	C	D
27	A	B	C	D
28	A	B	C	D
29	A	B	C	D
30	A	B	C	D
31	A	B	C	D
32	A	B	C	D
33	A	B	C	D
34	A	B	C	D
35	A	B	C	D
36	A	B	C	D
37	A	B	C	D
38	A	B	C	D
39	A	B	C	D
40	A	B	C	D

Question 1 C

The hippocampus plays a key role in the consolidation of explicit memories, but explicit memories are stored primarily in the cerebral cortex.

Question 2 B

Zane's mother is using negative punishment by removing his phone (punishment) to reduce the swearing behaviour (negative behaviour).

Question 3 A

The somatic nervous system is responsible for the initial detection of sensory information; for example, shoes that are too tight on a foot. The brain will initiate a conscious motor response, which will travel through the spinal cord back to the somatic nervous system, resulting in the loosening or removal of the shoe.

Question 4 B

Val's fight-flight-freeze response would have been activated when she was experiencing the countershock response as stress hormones were released into her bloodstream, increasing her arousal levels and making her highly responsive to the threat of the fire.

Question 5 D

Val's body's ability to meet the demands of being homeless starts to decline when she enters the exhaustion stage as a result of a depletion of her bodily resources.

Question 6 C

Val would first become susceptible to colds and bacterial infection when she reaches the resistance stage, as her immune system starts to decrease in efficiency due to the prolonged demands placed on the body.

Question 7 D

Olivia's behavior has been classically conditioned in this case because she has passively learned an association between fig trees and being attacked by bats. Her amygdala triggers a fight-flight-freeze response when she is exposed to the fear-evoking stimulus (the fig tree) which causes an involuntary conditioned response (her whole body tensing up).

Question 8 A

Seeing a fig tree is now a conditioned stimulus that has occurred as a result of a past traumatic experience at Olivia's grandmother's house. Olivia's fear response has been triggered as a result of the conditioning.

Question 9 C

Being attacked by a swarm of bats is the unconditioned stimulus. This is because when an individual is threatened, the fear centres in the brain are wired to reflexively trigger a fight-flight-freeze response in order to best respond to the threat.

Question 10 D

Olivia's unconditioned response is falling backwards and freezing in terror, as it is a natural response to the attack by a potential threat in the form of a swarm of bats. No learning or conditioning is required in this case as the fear centres in the brain will reflexively trigger a response when the body is threatened.

Question 11 B

Olivia's parasympathetic nervous system would have been dominant during her 'freeze' response as her body would have briefly acted as if it was injured during this state.

Question 12 A

Whilst Olivia was frozen with fear, her body temperature would have briefly fallen. Additionally, her heart rate would most likely decrease, salivation would cease to function and adrenaline would not be released until the fight-flight-freeze response was subsequently triggered.

Question 13 A

Acetylcholine is a neurotransmitter which plays a key role in the formation of memory and the ability to concentrate. Thus, victims of Alzheimer's disease have reduced levels of acetylcholine, which affects their short-term memory and declarative memory in particular.

Question 14 C

Episodic memories are autobiographical memories that need to be consciously declared and reconstructed when recalled. They are malleable during the reconstruction and reconsolidation process, particularly when a person is confronted with leading questions that may contain misinformation.

Question 15 B

In terms of neural pathways involved in memory, long-term depression is a result of a **low**-frequency stimulation of a presynaptic neuron, which will weaken an existing synapse. This theoretically can assist in clearing the brain of old memories.

Question 16 C

Ben's primary appraisal of his situation is that the demands of teaching are significant, specifically as a threat, as the demands are ongoing and potentially exceed his coping resources. A benign or irrelevant primary appraisal tends to be short-term and does not require any further appraisal or coping. An appraisal of a challenge would be reflected by Ben viewing teaching as having a potentially positive outcome.

Question 17 D

Ben is using a problem-focused coping strategy by constructively endeavoring to reduce his stress by taking control of his situation and determining if he should remain in teaching or travel in order to contemplate his future. An emotion-focused coping strategy would involve a maladaptive strategy such as avoidance. A primary or secondary appraisal relates to an evaluation of the significance of the stressor (teaching) and coping resources.

Question 18 D

If Vern evaluates the demands of teaching as 'benign', then the appraisal does not go beyond a primary appraisal. A primary appraisal of the threats, harm and challenges of teaching are all significant and would result in an evaluation of the coping resources through a secondary appraisal.

Question 19 B

Short-term memory has a capacity of five to nine bits of information; sensory memory (iconic and echoic) as well as long-term memory have an unlimited capacity.

Question 20 D

Anterograde amnesia is a common temporary symptom of brain surgery; patients typically have difficulty consolidating declarative memories due to temporary dysfunction in the hippocampus.

Question 21 A

People living with Parkinson's disease tend to have dysfunctional GABA systems in the brain, which can result in a variety of motor symptoms. Drugs that target GABA levels in the brain mimic the effects of GABA at the receptor sites on the dendrites of postsynaptic neurons to help relieve the symptoms of Parkinson's disease.

Question 22 D

Parkinson's disease results from an imbalance of GABA and dopamine. A lack of dopamine causes the neurons in the substantia nigra to fire uncontrollably, which results in a loss of control of movement. Adrenaline and cortisol are hormones that play a key role in arousal and the stress response. Glutamate is a neurotransmitter that plays a key role in learning and memory.

Question 23 B

A less sensitive measure of retrieval will only register an existing memory trace if a large memory trace is still present. Free recall, which provides no cue, is the least sensitive measure of retention. Relearning is the most sensitive measure as it uses the savings score to measure the strength of an existing memory trace.

Question 24 A

Adrenaline is a neurohormone (as opposed to GABA, dopamine and glutamate, which are neurotransmitters) that is released by neurons but can enter the bloodstream. High levels of adrenaline are typically present during a stressful and highly emotional event, which enhances the memory of the event.

Question 25 C

Eustress is a positive psychological response to a stressor which often triggers a boost in energy levels. It activates the sympathetic nervous system as the body does not discern between good stress (eustress) and bad stress (distress).

Question 26 D

The class experiment used an independent-groups design. The males acted as the control group as they were not exposed to the independent variable, and the females acted as the experimental group as they were exposed to the independent variable, independently from the male group.

Question 27 D

Group A would be expected to have a recency effect due to the use of maintenance rehearsal. This would enable the males to maintain the words briefly in short-term memory without linking them to material in long-term memory until they are retrieved during the experiment. Elaborative rehearsal would require the participants to actively link the words to material already in long-term memory.

Question 28 A

Based on the expected findings of the experiment, group B would have a primacy effect only, as the earlier items on the serial list would have had additional attention and rehearsal compared to the middle and latter words, and thus would have been stored in long-term memory. The latter items would have been displaced from long-term memory by the interfering task that required the participants to list a series of prime numbers, thus eliminating the recency effect.

Question 29 A

The males in the class were non-randomly allocated to the control group as they did not have an equal chance of being allocated to either the control or experimental group, given the allocation was based on gender. They served as a baseline measure for comparison against the experimental group which experienced the delayed recall (the females in this case) and thus the males were the control group.

Question 30 C

Trying to list a series of prime numbers would eliminate the ability to use maintenance rehearsal of the latter items on the serial list. This would limit the ability of short-term memory to retain these words as it can only retain unrehearsed material for up to 30 seconds.

Question 31 B

In terms of observational learning processes according to Bandura, an individual is more likely to pay attention to a model that is demonstrating behavior when the model has high status and is perceived positively.

Likewise, the observer is more likely to pay attention when the model is known to the observer; when the model demonstrates behaviour that the observer perceives they can competently complete, and when the model has traits that are similar to the observer's.

Question 32 C

In terms of sources of stress, life events can cause either eustress (for example, planning a wedding) or distress (for example, the loss of a spouse).

Question 33 C

GABA is a type of neurotransmitter, which is conveyed in chemical form through the synapses from neuron to neuron (as opposed to a neurohormone, which is circulated through the bloodstream). GABA has an inhibitory effect on postsynaptic neurons which makes them less likely to fire, and thus it has a calming effect on the brain and body.

Question 34 C

The axon terminal stores the neurotransmitter glutamate, which is released into the synapse as a result of an action potential. The dendrites on the postsynaptic neuron receive glutamate, the soma initiates the action potential and the myelin sheath protects and insulates the axon and thus enhances the transmission of the action potentials.

Question 35 D

The myelin sheath surrounds and insulates the axon and speeds up the electrical impulses travelling through the neuron. The soma is the cell body, which initiates action potentials that are conveyed via the axon to the axon terminals, which then triggers the release of stored neurotransmitters into the synapse.

Question 36 C

Endorphins are chemicals that interact with receptors in the brain and can provide a sense of wellbeing, as well as reducing pain. Exercise can be an effective strategy for coping with stress by releasing additional beta endorphins.

Question 37 B

People who use avoidance strategies to cope with stress tend to have a higher level of physiological response to a stressor than individuals who use a problem-based approach. This is because avoidance fails to deal with the source of the stress, as opposed to a problem-based approach. Exercise will help the person flush out excess cortisol that lingers in the bloodstream as a result of stress and thus reduce the physiological symptoms of stress. Coping flexibility refers to individuals who have the ability to adapt to a range of different stressors.

Question 38 B

Classical conditioning occurs by repeatedly associating two previously unrelated stimuli until the presentation of the conditioned stimulus will reflexively elicit a conditioned response. Social learning and observational learning rely on the consequences observed by an individual paying attention to a model's behaviour. Operant conditioning relies on the learning determining whether the consequences are desirable or undesirable, which will thus determine the likelihood of the behaviour being repeated.

Question 39 A

When learning occurs vicariously via social learning, the behaviour can remain hidden (latent) until a situation may arise where the learner has the opportunity to demonstrate the learning. For example, a school class watching a CPR demonstration may pay attention, retain the key steps, be physically capable (reproduction) of the movements required and be motivated to attempt CPR should an opportunity arise.

Question 40 B

John Watson classically conditioned Little Albert's emotional response to the presence of a white rat by continually pairing the white rat (neutral stimulus) with a loud gong (unconditioned stimulus) until Little Albert had formed an association between the white rat and the loud noise.

SECTION B – SHORT-ANSWER QUESTIONS**Question 1** (2 marks)*For example:*

- Long-term depression involves the firing of a weak signal across the synapse, whereas long-term potentiation involves the firing of a stronger signal.
- A postsynaptic neuron is more likely to fire in the future as a result of long-term potentiation and less likely to fire as a result of long-term depression.

2 marks

*1 mark for each difference identified.***Question 2** (4 marks)

- a. Glutamate is an excitatory neurotransmitter. 1 mark
It plays a key role in the formation of long-term memories. 1 mark
- b. In terms of learning, glutamate neurotransmitters represent the ‘keys’ that need to bind with the NMDA and AMPA receptors which represent the ‘lock’. 1 mark
When the receptor binds with the neurotransmitter (that is, the ‘key’ opens the ‘lock’) there will be an excitatory effect which over time will result in long-term potentiation. 1 mark

Question 3 (3 marks)

Sensory receptors in Lucia’s peripheral nervous system will detect the pain signal. 1 mark
Afferent signals will then be sent to the spinal cord in the central nervous system, where the interneurons will integrate the sensory and motor information. 1 mark
Efferent messages will then be sent back down the spinal cord to the peripheral nervous system, then to the effector muscles in Lucia’s leg, leading to the withdrawal of the foot. 1 mark

Question 4 (3 marks)

When Georgia was attempting to recall the names, she had no cues. 1 mark
Viewing the photo involved recognition, which provided cues in the form of the faces in the photo. 1 mark
The use of additional cues made it is easier for Georgia to remember more names because recognition is a more sensitive measure of retrieval. 1 mark

Question 5 (2 marks)*Any one of:*

- **Informed consent:** Little Albert was obviously too young understand the nature of the experiment, and it appears that his mother was not fully aware of elements such as the nature of the experiment, the rights of her son or the risks involved.
- **No harm principle:** Little Albert demonstrated severe distress, thus the experiment should have been terminated immediately to avoid further emotional trauma to Little Albert. He suffered psychological damage which was not extinguished (reversed).
- **Debriefing:** Little Albert's parents were not told about the findings of the experiment or informed of how they could receive assistance in reversing the harmful side effects of the study. Watson neglected to extinguish Little Albert's fear of fluffy white things.
- **Beneficence:** The importance of the findings did not outweigh the harm done to Little Albert.

2 marks

*1 mark awarded for identifying an ethical breach.**1 mark awarded for the explanation.***Question 6** (2 marks)

Implicit memories are recalled unconsciously; for example, skill-based memories such as writing a signature, while

1 mark

explicit memories are consciously recalled; for example, recalling the date of a friend's birthday.

1 mark

Question 7 (4 marks)

- a. When her freeze response was triggered, Millie was paralysed with fear. 1 mark

Millie appeared to be injured (or dead) as her body was not yet ready to deal with the threat of being trapped in a car.

1 mark

- b. Cortisol is a stress hormone that aids the metabolism of fats, proteins and carbohydrates, as well as increasing glucose levels in the blood, providing additional energy for muscles. 1 mark

This is helpful in the short-term as it increases Millie's responsiveness to the threat of being trapped in her car.

1 mark

Question 8 (4 marks)

Context-dependent cues refer to the external environment in which the encoding and retrieval take place.

1 mark

Thus if Eloise was to practice her monologue in an environment that is similar (or the same) as the place in which she will recite the lines, then she is likely to have a greater capacity to recall the lines.

1 mark

State-dependent cues refer to the internal environment in which the encoding and retrieval take place.

1 mark

If Eloise was to rehearse her monologue in front of family or friends this may make her nervous; if she is in a similar (nervous) state when attempting to recall her lines during the monologue, then her lines should be easier to recall.

1 mark

Question 9 (4 marks)

- a. An approach coping strategy involves an effort to confront a stressor and deal directly with it and its effects. 1 mark
- Drew focuses his activity towards the stressors he encounters in his role as principal, the causes of the stressors (such as conflicts with staff, parents or students) and arriving at solutions that will address the underlying problems in order to reduce or eliminate their impact on him (such as by delegating some of his responsibilities). 1 mark
- b. *Any one of:*
- Approach coping strategies are generally considered to be more adaptive and effective than avoidance strategies (the alternative to an approach strategy).
 - People who rely more on approach strategies to cope with a stressor tend to experience fewer psychological symptoms and are more able to function effectively compared to people who rely more on avoidance strategies.
- 1 mark
- c. *For example:*
- It may require a lot of Drew's energy and focus to deal with the stressor, thereby neglecting other aspects of his life such as his family or health. 1 mark

Question 10 (7 marks)

- a. whether the student was asked a leading question or not after witnessing the incident 1 mark
- b. reconstruction 1 mark
- The students were asked to reconstruct their memory of the incident based on the abstract features of the incident that they could recall; the students would then incorporate other details from their long-term memories into the reconstructed memory in order to conventionalise the story. 1 mark
- c. The control group was the group of students who were not asked a leading question (and thus served as a baseline measure of comparison to the experimental group who were asked the leading question). 1 mark
- d. A leading question suggests what the answer should be (based on the wording of the leading question, this can result in the witness including misinformation in their recall of an event). 1 mark
- e. It would be expected that the group of students who were asked the leading question would be more likely to report the false memory of the student throwing the book at the librarians than the group of students who were not asked the leading question. 1 mark

Question 11 (5 marks)

- a. **antecedent:** planning a run 1 mark
- behaviour:** wearing the toe socks 1 mark
- consequence:** avoiding foot blisters 1 mark
- b. negative reinforcement 1 mark
- The wearing of the toe socks has been strengthened (reinforced) by removing (negative) the aversive foot blisters. 1 mark

Question 12 (10 marks)

Acculturative stress occurs when there is a negative psychological impact of adaptation to a new culture. The variation and intensity of the acculturative stress depends on the extent of dissimilarity between the host culture and the culture of the migrant. This could be based on language skills, level of education, employment skills, social attitude, political views, race, age or gender, for example.

The results of the experiment provide evidence of the benefits of an immersion program for newly arrived international students who are about to undertake a degree. Given the challenges faced by young international students, a program that can assist with their language skills, dealing with cultural changes and educating students on ways of coping with racial prejudice or discrimination would potentially be beneficial if made available.

The use of an independent-groups research design was both time- and cost-effective in comparison to a matched-participants research design. The limitation of the research design is that participant-related variables could have had a significant impact on the results. For example, the country the students were from would affect their language skills, or the extent of cultural variations between the host and visiting countries could have an affect.

The use of the self-reporting technique enables Professor Trueman to generate rich detail about the participant's levels of anxiety, which could lead to further analysis and investigation. The subjectivity of the reporting could affect the validity of the responses; some participants may have been unclear of the intention of the question due to language difficulties or a wording effect.

The use of volunteers would limit the extent to which the results can be generalised to the wider population. Likewise, the use of students from just two of Australia's universities would limit the researcher's ability to generalise the results to other universities. In order to generalise the results to the wider population, the researchers may need to use a stratified sample, in which the proportion of students from different regions of the world are selected in the sample to match the proportions of international students studying at a university in Australia.

Standard	Marks	Marking grid
Very high	9–10	<ul style="list-style-type: none"> • a detailed explanation of acculturative stress • a detailed explanation of implications and how they can be applied to the ‘real world’ • a detailed evaluation of the independent-groups research design used in this experiment • a detailed evaluation of the self-reporting used in this experiment • a detailed explanation of the suitability of a generalisation
High	7–8	<ul style="list-style-type: none"> • a thorough explanation of acculturative stress • a thorough explanation of implications and how they can be applied to the ‘real world’ • a thorough evaluation of the independent-groups research design used in this experiment • a thorough evaluation of the self-reporting used in this experiment • a thorough explanation of the suitability of a generalisation
Medium	5–6	<ul style="list-style-type: none"> • a moderate level of explanation of acculturative stress • a moderate level of explanation of implications and how they can be applied to the ‘real world’ • a moderate level of evaluation of the independent-groups research design used in this experiment • a moderate level of evaluation of the self-reporting used in this experiment • a moderate level of explanation of the suitability of a generalisation
Low	3–4	<ul style="list-style-type: none"> • a limited/low level of explanation of acculturative stress • a limited/low level of explanation of implications and how they can be applied to the ‘real world’ • a limited/low level of evaluation of the independent-groups research design used in this experiment • a limited/low level of evaluation of the self-reporting used in this experiment • a limited/low level of explanation of the suitability of a generalisation
Very low	0–2	<ul style="list-style-type: none"> • a limited, if any, explanation of acculturative stress • a limited, if any, explanation of implications and how they can be applied to the ‘real world’ • a limited, if any, evaluation of the independent-groups research design used in this experiment • a limited, if any, evaluation of the self-reporting used in this experiment • a limited, if any, explanation of the suitability of a generalisation