

## 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 B**

**B** is correct. The sympathetic nervous system is responsible for the dilation of the pupil, enabling it to increase the amount of light that enters the eye according to the relative lighting conditions.

**A** is incorrect. The somatic nervous system is largely responsible for voluntary actions, as opposed to the involuntary actions of the autonomic nervous system. **C** and **D** are incorrect. The eye makes this response independently of the central nervous system, which includes both the spinal cord and the brain.

**Question 2 D**

**D** is correct. Shirley's movement of jerking her thigh away from the hot sand is best described as a spinal reflex, which would have been triggered by the activation of both the somatic and central nervous systems.

**A**, **B** and **C** are incorrect. A stress response or the fight-flight-freeze response to a perceived threat would have activated the sympathetic division of the autonomic nervous system, but in this instance none of these responses are used.

**Question 3 B**

**B** is correct. Shirley's sensory neurons were responsible for initiating the reflexive movement. **A** is incorrect. 'Somatic' is a division of the nervous system and not a type of neuron. **C** and **D** are incorrect. The sensory neurons would have conveyed the sensory message to the interneurons in the spinal cord. The interneurons would have then integrated the sensory and motor information, thus initiating the reflexive action that would have been relayed via a motor neuron to effectors in Shirley's body, enabling the movement of her leg back to the towel.

**Question 4 A**

**A** is correct. The axon is responsible for conducting the afferent message towards Shirley's spinal cord. **C** is incorrect. The axon would conduct the message after the soma initiated an action potential. **B** is incorrect. The myelin sheath enhances transmission of the signal. **D** is incorrect. The dendrite on a post-synaptic cell is responsible for the reception of the signal.

**Question 5 D**

**D** is correct. Dopamine neurotransmitters in the substantia nigra represent the 'keys' that bind with the complementary matching receptors in the motor areas of the brain, which act as 'locks'. **A** and **B** are incorrect. Glutamate plays a major role in memory and learning. **C** is incorrect. The receptors are the locks that the neurotransmitter keys bind with.

**Question 6 C**

**C** is correct. When released from a pre-synaptic axon terminal into the synaptic cleft, gamma-amino butyric acid (GABA) will potentially bind with a complementary receptor, resulting in an inhibitory effect on a post-synaptic neuron. **A** and **B** are incorrect. GABA is released from an axon terminal and the inhibitory effects of GABA will take place at the receptor sites (across the synapse). **D** is incorrect. The inhibitory effect occurs after GABA binds with its complementary receptor.

**Question 7 A**

**A** is correct. Due to the degeneration of the dopamine-producing neurons in the substantia nigra of an individual with symptoms of Parkinson's disease, the motor areas of the brain experience a lack of the excitatory effects of the neurotransmitter dopamine, which plays a key role in motor control. **B** is incorrect. There is a lack of dopamine (not an excess) due to the degeneration of the dopamine-producing cells in the substantia nigra. **C** and **D** are incorrect. Dopamine has an excitatory (not an inhibitory) effect on the motor areas of the brain.

**Question 8 D**

**D** is correct. The muscle rigidity that is experienced by individuals who suffer from Parkinson's disease can be attributed to a lack of neural input to the motor areas of the brain that are responsible for motor control. **A** and **B** are incorrect. The degeneration of neurons occurs in the brain and not in the skeletal muscles. **C** is incorrect. Long-term depression (LTD) is caused by a long-lasting weakening of synaptic connections rather than the degeneration of cells that is the source of Parkinson's disease.

**Question 9 C**

**C** is correct. The scholarship can best be identified as eustress as it is a positive response (Jadeling's feelings of excitement). **A** is incorrect. A major stressor is a source of stress that affects a broader community. **B** is incorrect. A challenge is an evaluation of a stressor and not a form of stress. **D** is incorrect. Jadeling did not experience any acculturative stress in this scenario which would be the case if the scenario included a negative impact of an adaptation to a new culture.

**Question 10 A**

**A** is correct. When Jadeling was unable to move or speak after having received her scholarship, she had gone into shock and was experiencing a freeze response. **B** is incorrect. Counter shock occurred later when she became excited by the news. **C** is incorrect. Distress is a negative response to a stressor; in this scenario, Jadeling has experienced a positive response (eustress). **D** is incorrect. Resistance occurred after counter shock.

**Question 11 B**

**B** is correct. As Jadeling consciously registered the news of the scholarship and felt excitement, this was a form of eustress. **A** is incorrect. After briefly experiencing shock, Jadeling went into counter shock. **C** is incorrect. A state of resistance would have occurred later when Jadeling's body tried to adapt to the sustained stress. **D** is incorrect. Her body was unable to maintain homeostasis and adapt to the sustained demands of the news.

**Question 12 C**

**C** is correct. The morning following the news of her scholarship, Jadeling was making a secondary appraisal by evaluating her ability to cope with the news. **A** and **D** are incorrect. Counter shock and context-specific effectiveness are not part of Lazarus and Folkman's Transactional Model of Stress and Coping. **B** is incorrect. Primary appraisal would have occurred during the previous night when Jadeling first learned of her scholarship.

**Question 13 D**

**D** is correct. Jadeling's primary appraisal of the news of her scholarship would be best identified as a significant challenge, as she has assessed the news as an opportunity for personal growth. **A** is incorrect. A significant threat would involve evaluating the potential for future harm, which Jadeling did not do. **B** and **C** are incorrect. As this scholarship is a life event which will require a great deal of energy and adaptation, such as moving overseas, the primary appraisal is significant and not benign-positive or insignificant.

**Question 14 A**

**A** is correct. When Jadeling started to feel excited about her scholarship, adrenaline would have been released from her adrenal gland because of the eustress that she experienced as a result of the activation of her sympathetic nervous system. **B**, **C** and **D** are incorrect. Glutamate, dopamine and GABA are all neurotransmitters that are released in the brain.

**Question 15 B**

**B** is correct. Eustress is generally beneficial, as it tends to enhance performance, whereas distress tends to impair performance. **A** is incorrect. Both distress and eustress activate the sympathetic nervous system. **C** is incorrect. Eustress tends to have a short-term effect on the body, whereas distress can have either a short-term or long-term effect on the body. **D** is incorrect. Eustress is unlikely to trigger a fight or flight response, as it poses no threat to the body.

**Question 16 C**

**C** is correct. Lazarus and Folkman's Transactional Model of Stress and Coping fails to account for stress responses that occur without conscious thought, such as when a fight-flight-freeze response is triggered when the body is under threat. **A** is incorrect. The model was developed largely on case studies of humans who had experienced life events. **B** and **D** are incorrect. The model caters for individual differences in the way that humans subjectively appraise stressors and the way in which environmental factors can influence the evaluation of a stressor.

**Question 17 B**

**B** is correct. Abe's decision to go for a run was an avoidance coping strategy, as he was directing his energy towards the emotions triggered by the stressor rather than the source of the stressor. **A** is incorrect. If he had directed his energy towards the source of the stressor it would have been an approach coping strategy. **C** and **D** are incorrect. High-coping flexibility, which would implement context-specific coping, was not evidenced by Abe's actions in this scenario. Going for a run is merely a short-term avoidant strategy that will not enable Abe to cope effectively in the long-term.

**Question 18 C**

**C** is correct. Abe's decision to go for a run will help him to direct his attention towards planning how to have a conversation with the police. **A** and **B** are incorrect. Abe's run would activate the skeletal muscles in his legs and arms and his cardiac muscles via activation of the sympathetic nervous system. **D** is incorrect. Exercise would put his body under a degree of stress and thus trigger the release of additional cortisol.

**Question 19 B**

**B** is correct. Selye gathered his data using experiments conducted under controlled conditions. **A** is incorrect. In the experiments, the rats were exposed to a series of stressors to determine how their bodies would adapt to stress. A rat cannot conduct a rating scale (a type of self-report). **C** is incorrect. A case study is an in-depth study of an individual or group, which was not applied on the rats tested in this case. **D** is incorrect. Secondary data is gathered from an external source, and Selye generated his data internally.

**Question 20 B**

**B** is correct. Glutamate (a neurotransmitter) plays the largest role in the long-term potentiation (LTP) of both explicit and procedural memories. **A** is incorrect. Dopamine (a neurohormone) plays a key role in motor control of movements (that are innate or already learned). **C** is incorrect. Adrenaline (a neurohormone) mediates the emotionality of a memory. **D** is incorrect. GABA (a neurotransmitter) has an inhibitory effect on central nervous system activity.

**Question 21 B**

**B** is correct. Due to the low frequency with which the post-synaptic neurons are activated, they become less responsive to the input from the pre-synaptic neurons. **A** is incorrect. An excitatory or inhibitory effect is a determination of the impact of the neurotransmitter on the post-synaptic neuron, not a pre-synaptic neuron. **C** and **D** are incorrect. LTD does not cause the blocking of cells, as is the case with drugs that have an antagonistic effect.

**Question 22 A**

**A** is correct. It would be most difficult to generate a control group that could serve as a baseline measure given the experiment is exploring the relationship between electroconvulsive therapy (ECT) and anterograde amnesia as a symptom of the treatment. **B** is incorrect. Qualitative data could be readily generated through interviews with patients. **C** and **D** are incorrect. A sample could be obtained by contacting clinics to generate a convenience sample of participants who could be tested to generate primary data.

**Question 23 C**

**C** is correct. The research team could gather secondary data from past research conducted by a third party. **A**, **B** and **D** are incorrect. Conducting an experiment, observing effects and reporting findings and getting participants to complete self-reports are all examples of primary data, as the data is directly generated by the experimenter.

**Question 24 A**

**A** is correct. There is no allocation of participants required to either a control or experimental group in a repeated-measures design that has not been counterbalanced. **B** is incorrect. A sample of participants would need to be recruited to participate in the study. **C** and **D** are incorrect. Prior to the commencement of the experiment, the researchers would need to obtain the informed consent of the sample of participants and then debrief them at the conclusion of the study.

**Question 25 C**

**C** is correct. Anterograde amnesia is characterised by difficulty in transferring explicit memories from short-term memory (STM) to long-term memory (LTM). This could be tested by exposing participants to a series of words and then having a brief delay to determine if they had transferred the words to LTM and thus provides an easily testable dependent variable. **A** and **D** are incorrect. Procedural memory would be potentially unaffected by ECT if there was no impact on the cerebellum; likewise, the ability to reconstruct memories from before the ECT would be largely unaffected. **B** is incorrect. The time taken between the ECT treatment and the memory test is a potential independent variable.

**Question 26 C**

**C** is correct. Conducting interviews with participants, either before or after the ECT, is a self-reporting technique that would generate rich, detailed qualitative data. **A**, **B** and **D** are incorrect. Calculating a measure of central tendency, using a rating scale and generating descriptive statistics are all quantitative measures.

**Question 27 B**

**B** is correct. The reliability of experimental data can best be evaluated through replication to evaluate the consistency of the data generated. **A** and **D** are incorrect. The application of informed consent and debriefing are ethical considerations, which have no relevance to reliability. **C** is incorrect. Operationalising the variables is simply a means of determining how the dependent variable will be measured and the independent variable is manipulated.

**Question 28 B**

**B** is correct. Watson and Rayner should have extinguished Little Albert's conditioned emotional response during the debriefing process in order to reverse the effects of the conditioning. **A** is incorrect. The informed consent process should have alerted his mother (prior to commencement of the experiment) of the nature of the study and the potential risks. **C** is incorrect. Albert was not withdrawn from the experiment. **D** is incorrect. The experiment was not overseen by an ethics committee.

**Question 29 D**

**D** is correct. Participants were recruited through convenience sampling by accessing available customers from the store's website. **A** and **C** are incorrect. This did not give all members of the population an equal chance of participating (which would be the case if a random sample were used). **B** is incorrect. The participants were randomly selected and then non-randomly allocated to the two groups. It is non-random as the alphabetising of surnames does not give every participant an equal chance of being allocated to either group (as would be the case with random allocation through, for example, a coin toss).

**Question 30 D**

**D** is correct. The researchers have created an experiment to explore the causal relationship of the effectiveness of two forms of observational learning on the assembly of a desk. **A** is incorrect. A case study is an in-depth study of a group. **B** is incorrect. An observational study is an observation of individuals in a natural setting. **C** is incorrect. The research design for this experiment was an independent groups design, but the question asks for the type of the research investigation, not the research design method.

**Question 31 A**

**A** is correct. Participants needed to reconstruct the memory of how to assemble the desk by accessing the stored memories and combining this with other material in memory to generate a sequential memory of the assembly instructions. **B** is incorrect. Recall involves retrieval with minimal cues; in this case, there are abundant cues in terms of the individual parts of the desk. **C** is incorrect. Recognition involves identifying correct information from alternatives (for example, if participants were given a choice of choosing which screw is needed to secure a desk leg). **D** is incorrect. Relearning would be applicable if the participants successfully assembled the desk and then had a lengthy rest period in which they believed they had forgotten how to assemble the desk and then had to relearn the assembly procedures.

**Question 32 B**

**B** is correct. STM would actively process the steps required and instructions to remember in order to assemble the desk. **A** and **C** are incorrect. Sensory memory and LTM are more passive stores, as material is either attended to from sensory memory or retrieved from LTM for active usage in STM when reconstructing the memory of the assembly of the desk. **D** is incorrect. Implicit memory refers to memories that are retrieved without conscious or active awareness.

**Question 33 C**

**C** is correct. The offer of a free store voucher to participate in the research would motivate the participants to complete the desk assembly. **A** is incorrect. Retention refers to the ability to create a mental representation of the steps required (such as assembling the desk). **B** is incorrect. Reproduction refers to the ability to perform necessary steps. **D** is incorrect. Vicarious reinforcement applies to the in-store employee who demonstrated the assembly of the table to group 2.

**Question 34 A**

**A** is correct. Joe's use of music will act as a context-dependent cue to help his retrieval of the movements during the class. This is due to the external environment cues that were present when he was trying to encode the explicit details of the class structure. Thus, the music is used as an environmental cue to assist the retrieval of the movements when in class. **B** is incorrect. The use of music will not in itself assist the rehearsal of the movements. **C** and **D** are incorrect. State-dependent cues refer to internal environments, such as mood.

**Question 35 C**

**C** is correct and **B** is incorrect. Joe's memory of the order of pilates movements is an example of a semantic memory that needs to be consciously recalled back into STM for use. **A** is incorrect. An example of a procedural memory would be a well-practiced pilates move. **D** is incorrect. A flashbulb memory is typically a highly emotional memory that is vividly recalled when inadvertently cued.

**Question 36 D**

**D** is correct. One of the contributing factors for Alzheimer's disease is the destruction of neurons that transmit acetylcholine. Acetylcholine plays a key role in cognition and thus an early indicator of Alzheimer's disease is cognitive impairment, particularly in STM functioning. **A** and **B** are incorrect. Glutamate and dopamine are neurotransmitters that play a role in memory, but the cells that produce them are largely unaffected in the early stages of the disease. **C** is incorrect. GABA plays a key role in regulating the neuronal excitability of the central nervous system.

**Question 37 B**

**B** is correct. Neurofibrillary tangles within the axonal fibers cause the destruction of hippocampal neurons in individuals with Alzheimer's disease. **A** is incorrect. Pruning of dendrites and axon terminals is a natural feature of the plasticity of the brain and is not a result of neurofibrillary tangles in the brains of individuals with Alzheimer's disease. **C** is incorrect. Amyloid plaques act as a barrier that blocks communication between the neurons. **D** is incorrect. The myelin sheath does deteriorate gradually due to the ageing process, but is not a result of neurofibrillary tangles in the brains of individuals with Alzheimer's disease.

**Question 38 A**

**A** is correct. Adrenaline plays a key role in mediating the emotionality of an episodic memory. **B** and **C** are incorrect. Glutamate is largely responsible for the consolidation of procedural and semantic memory. **D** is incorrect. Acetylcholine plays a key role in STM.

**Question 39 C**

**C** is correct. Deception in research is primarily used to control the effects of participant expectancy that may confound results. **A** is incorrect. The researcher must avoid using deception to recruit participants and thus ensure that informed consent procedures are exercised. **B** is incorrect. The role of the experimenter is to ensure that merit and integrity are prioritised by conducting a worthwhile, honest experiment. **D** is incorrect. It is a responsibility of the experimenter to minimise psychological harm or distress experienced by the participants.

**Question 40 D**

**D** is correct. According to research conducted by Loftus, a memory was most fallible during the reconstruction (a type of retrieval) of the memory from LTM back into STM, as the eyewitness may experience source confusion due to the impact of a leading question that may contain misinformation. **A** is incorrect. Sensory memory will only briefly register and buffer material in its raw form until it is attended to and encoded in STM, where it is actively processed and transferred into LTM. **B** and **C** are incorrect. According to Loftus, the fallibility of a memory occurred during the retrieval stage and not during the earlier encoding and rehearsal of the memory.



**SECTION B****Question 1** (4 marks)

For example, any two of:

- Axon terminals have vesicles that store neurotransmitters, while dendrites have the receptors where reception occurs.
- The axon terminal sends the neurotransmitters across a synapse where they bind with a receptor. The dendrite receives the neurotransmitter.
- In terms of the transmission of a signal across a synapse, the axon terminal represents part of the pre-synaptic neuron, while the dendrite represents part of the post-synaptic neuron.

4 marks

*2 marks for each correct difference that mentions both axon terminals and dendrites.*

**Question 2** (6 marks)**a. Central nervous system:**

Brain: Sarah's brain consciously registers that a swimmer is under threat and then processes the information before triggering a voluntary response to attempt to save the swimmer.

1 mark

Spinal cord: Sarah's spinal cord is responsible for relaying afferent and efferent signals from the peripheral nervous system to help coordinate the response.

1 mark

**Peripheral nervous system:**

Somatic nervous system: The somatic nervous system is responsible for the regulation of the skeletal muscle activity. This would have occurred in Sarah's arm and leg muscles when swimming.

1 mark

Autonomic nervous system: The autonomic nervous system is responsible for the regulation of internal physiological functioning. This would have occurred when Sarah was under threat by increasing arousal to energise her body and respond to the threat.

1 mark

*Note: Response must refer to the scenario to receive full marks.*

- b.** Sarah's adrenal gland will release adrenaline into her bloodstream, which will circulate in the bloodstream and activate or enhance the activity of various muscles and glands (such as the heart).

1 mark

1 mark

**Question 3** (9 marks)

- a.** Vesna's diagnosis is a major stressor for Roy because the majority of individuals faced with such news would regard it as extraordinarily stressful. Roy would be stressed about the news that his wife has been diagnosed with an incurable neurodegenerative disease.

1 mark

The diagnosis is a life event because it is a significantly stressful event that will require Roy to adapt to Vesna's new circumstances.

1 mark

This adaptation could include giving her daily reminders of when to eat and take her medication, thus helping her maintain a sense of routine.

1 mark

*Note: Response must include an example of Roy's adaptation to receive full marks.*

- b.** Based on Roy's situational demands of dealing with his partner's diagnosis, he may find a match between the stress of dealing with the decline in the cognitive functionality of his partner and an appropriate coping strategy (such as seeking advice from an expert in treatment of Alzheimer's disease).

2 marks

*1 mark for identifying Roy's situational demands.**1 mark for explaining the relationship between a coping strategy and stress.*

- c.** Alzheimer's disease initially results in deterioration in the hippocampus (due to the presence of tau proteins that contribute to neurofibrillary tangles within neurons; these tangles result in the destruction of neurons that play a key role in memory).

1 mark

The hippocampus plays a major role in the transfer of explicit memories from STM to LTM; thus, Vesna is likely to have difficulty with explicit memories.

1 mark

Implicit memories such as procedural memories, which do not require conscious awareness, are relatively unaffected

1 mark

because the structures that govern them, such as the cerebellum, are initially unaffected by Alzheimer's disease.

1 mark

#### Question 4 (13 marks)

- a.** Group 1 may have used free recall  
by trying to retrieve as many of the 15 words from memory as possible, without any cues and in any order.

1 mark

1 mark

Group 2 may have used cued recall

1 mark

by using the first letter to help cue the rest of the word (for example, for the first word they could have used the letter A to help cue the word 'aunt').

1 mark

*Note: Serial recall could have also been used by either group; the participants would try to recall the words in the same order that they appeared in the table.*

- b.** Group 2 may have demonstrated both a primacy effect, (a superior recall of the earlier words on the list) and a recency effect (a superior recall of latter words on the list) and relatively lower retrieval rate of the middle words.

1 mark

Due to the primacy effect, the earlier words would have entered a relatively empty STM and thus received additional attention and rehearsal, and would have been more likely to be transferred to LTM.

1 mark

The middle items would have entered a relatively full STM and thus would have received a relatively lower level of attention and rehearsal, and thus would have been less likely to be transferred to LTM and would have been displaced from STM by the latter words.

1 mark

Due to the recency effect, the latter words would have been retained in the STM and thus could have been recorded by the participants (due to the capacity and duration of the STM, which can hold 5–9 words for up to 20 seconds without rehearsal).

1 mark

*Note: Response must relate to Claudia's experiment to receive full marks.*

- c.** confounding variable 1 mark
- If the participants had completed all three variations of the experiment, then an order effect would have systematically affected the results (due to a practice effect), as participants may have developed a better retention of the words due to additional exposure to the same list of 15 words. 1 mark
- This would have acted as a variable other than the independent variable, which would affect the dependent variable. 1 mark
- d.** *For example:*
- standard deviation 1 mark
- Standard deviation provides a measure of how far the scores deviate from the mean and thus provides an indication of the consistency of the scores for the three groups tested. 1 mark
- Note: Acceptable alternatives include the range or variance as a measure of spread.*

**Question 5** (8 marks)

- a.** *For example:*
- Hill Valley Secondary College could compare the effects of punishment on male students versus female students. 1 mark
- To determine if the punishment has a more significant effect on the wellbeing of either group of students the use of a cross-sectional study will be more efficient than a longitudinal study (which, in this case, would take 4 years to generate the data). 1 mark
- Note: Acceptable responses include comparing the effects of punishment on younger students compared to older students.*
- b.** The strata would first need to be established (for example, a male strata and a female strata). 1 mark
- Then the college would need to determine the proportion of each strata at the school (for example, 60% of students are male and 40% of students are female), and then the sample size would need to be determined (for example, 30 students). 1 mark
- Male and female students are then selected for the sample, ensuring that the same gender ratio is maintained (for example, 40% of the sample of 30 students = 12 female students and 60% of the sample of 30 students = 18 male students). 1 mark
- Note: Examples are not required, but may help to develop a high-level response.*
- c.** The intention of both punishment and response cost is to reduce, eliminate or weaken the target behaviour of, in this case, the students of Hill Valley Secondary College. 1 mark
- Note: Response must refer to the study to receive full marks.*
- d.** *For example:*
- The teachers may issue a lunchtime detention, thus removing the students' freedom during a lunchtime period 1 mark
- in order to reduce the incidence of work that is submitted after the due date. 1 mark

**Question 6 (10 marks)****Classical conditioning**

Classical conditioning involves the repeated association of two or more stimuli.

The student could be exposed to a series of advertisements designed to trigger positive or negative emotions that are paired with healthy or unhealthy foods respectively. In terms of the three-phase model, before the student is conditioned, healthy food such as fruit would act as a neutral stimulus and seeing an actor on TV enjoying a fun activity would act as an unconditioned stimulus. This would be intended to elicit positive emotions (the unconditioned response). Then, during the conditioning phase, the student could be repeatedly exposed to TV advertisements in which they would view an actor with some fruit (neutral stimulus) enjoying a fun activity (unconditioned stimulus). This would trigger positive emotions (the unconditioned response). After successful conditioning of the student had occurred, the sight of fruit in their home environment (conditioned stimulus) would elicit a positive emotion and a desire to eat the fruit (the conditioned response).

An advantage of classical conditioning is that it will cause the student to associate the sight of fruit in their home environment with positive emotion and thus trigger a reflexive desire to make good food choices on a consistent and regular basis. A limitation of classical conditioning is that the student would be less conscious of the benefits of maintaining healthy food choices compared to the alternative learning theories.

**Operant conditioning**

Operant conditioning is a type of learning in which the consequence of behaviour will determine the likelihood that the behaviour will be repeated.

The use of punishment and reinforcement could be used to either decrease the consumption of unhealthy foods or increase the consumption of healthy foods. Using the three-phase model of operant conditioning, the student's parent could be encouraged to strategically place fruit in areas of the home environment, which would act as an antecedent when the student sees them; if they choose to eat the fruit (behaviour), then they can be positively reinforced with a reward (consequence).

An advantage of operant conditioning is that it is a direct form of learning in which the student would actively learn about the relationship between healthy food and desirable consequence. They would thus be more consciously aware of good food choices. A limitation of operant conditioning is that it may be prone to extinction if there is an absence of consequences, such as if the student is not reinforced for making a good choice when they are consuming food without a family member's presence.

**Observational learning**

Observational learning occurs when a learner observes the actions of someone else, which will guide the observer's future behaviour depending on the consequences that followed the model's behaviour.

The student's family (such as parents and older siblings) could be encouraged to select healthy food when the student is actively watching their family members in the home environment (attention), thus the student will ideally develop a mental representation of healthy food choices (retention). The student will hopefully be capable of accessing healthy foods in their home environment (reproduction) and will then be motivated to mimic the behaviour of their family members who have been seen being reinforced with praise from other family members for making healthy food choices.

An advantage of observational learning is that the student could repeatedly observe the vicarious reinforcement of family members choosing healthy food options, which would potentially make this approach more resistant to extinction. A limitation of observational learning is that it may be more difficult for younger students to form a clear association between the behaviour (choosing healthy food options) and the consequences (the reinforcement of the model). This is because this model is a more indirect form of learning in comparison to the more direct learning that takes place when operant conditioning is employed.

10 marks

*Note: For classical conditioning, responses could refer to creating an aversion with unhealthy foods by using nausea inducing foods as an unconditioned stimulus. While this may be considered unethical, if the response successfully applies the principles of classical conditioning then this approach is an acceptable response. For operant conditioning, responses could also discuss the use of punishment to decrease the likelihood of continuing to select unhealthy food options.*

### **Marking guide**

#### *Very high (9–10 marks)*

The student has provided a highly detailed evaluation of all three types of learning, and includes:

- a definition of each type of learning;
- a suggested method for using each type of learning for the given scenario;
- a demonstration of higher order thinking skills in their evaluation, identifying both strengths and weaknesses of each approach.

#### *High (7–8 marks)*

The student has provided a detailed evaluation of all three types of learning, and includes:

- a definition of each type of learning;
- a suggested method for using each type of learning for the given scenario;
- identification of both strengths and weaknesses of each approach.

#### *Medium (5–6 marks)*

The student has provided a limited evaluation of all three types of learning, and includes:

- a definition of each type of learning;
- a suggested method for using each type of learning for the given scenario;
- identification of both strengths and weaknesses of each approach.

#### *Low (3–4 marks)*

The student has provided a limited evaluation of one or two types of learning, and includes:

- a definition of each type of learning;
- a suggested method for using each type of learning for the given scenario;
- identification of both strengths and weaknesses of each approach.

#### *Very low (0–2 marks)*

The student has provided a limited evaluation of only one type of learning, and includes:

- a definition of the type of learning;
- a suggested method for using the type of learning for the given scenario;
- identification of both strengths and weaknesses of the approach.