PSYCHOLOGY

Unit 3 – Written examination

2019 Trial Examination

SOLUTIONS

SECTION A: Multiple-choice questions (1 mark each)

Question 1

Answer: A

Explanation:
Myelin insulates the electrical message travelling through the axon and speeds up the rate of transmission of this message.

Question 2

Answer: C

Explanation:
The cerebellum would assist in the formation of the procedural memory associated with learning to strike a soccer ball.

Question 3

Answer: C

Explanation:
By giving her dog a pleasant consequence whenever she shakes, Anthea positively reinforces her dog.

Question 4

Answer: B

Explanation:
Long term depression will weaken the incorrect connection and long term potentiation will establish the new correct connection.

Question 5

Answer: D

Explanation:
Zane is likely to be experiencing eustress and Imani is likely to be experiencing acculturative stress.

Question 6

Answer: C

Explanation:
Adrenaline is a neurohormone that can act as both a neurotransmitter and hormone. Adrenaline is released by the axon terminals of the pre-synaptic neuron when functioning as a neurotransmitter, entering capillaries and travelling through the bloodstream to reach target cells. Glutamate, dopamine and acetylcholine are examples of neurotransmitters.

Question 7

Answer: A

Explanation:
Feeling a pen in your hand is an example of a conscious response because this is regulated by the somatic nervous system and feeling your stomach grumble when hungry is an example of an unconscious response because this is regulated by the autonomic nervous system.

Question 8

Answer: C

Explanation
The somatic system is a voluntary system responsible for coordinating the actions associated with eating popcorn. Increased heart rate is a function of the sympathetic division of the autonomic nervous system and regulated breathing is controlled by the parasympathetic division of the autonomic nervous system.

Question 9

Answer: B

Explanation
Given the event is a potential job loss in the future, which Jacob is concerned about, this appraisal is one of threat.

Question 10

Answer: A

Explanation
Glutamate is the major excitatory neurotransmitter in the nervous system. This means that when they bind to receptor sites, they increase the likelihood of the firing of an electrical signal.

Question 11

Answer: D

Explanation
A convenience sample was used, as Dr Blume recruits participants from a small selection of bars and pubs. This does not give all members of the population of interest an equal chance of selection.

Question 12

Answer: A

Explanation
Dr Blume used an independent groups design.

Question 13

Answer: C

Explanation
The IV was alcohol consumption, and whether or not participants consumed it.

Question 14

Answer: C

Explanation
Dr Blume upholds voluntary participation by allowing participants to freely contact her if interested in participating in the study.

Question 15

Answer: B

Explanation
In the lock and key process, neurotransmitters are keys (represented by A) and receptor sites are locks (represented by B). Students who select option D do not demonstrate specificity in the location of receptor sites.

Question 16

Answer: C

Explanation
Classical conditioning is a passive, involuntary form of learning, whereas operant conditioning is an active, voluntary form of learning.

Question 17

Answer: A

Explanation
Informed consent involves participants being aware of the nature of an experiment and associated risks and giving written permission. This did not occur in the Little Albert experiment.

Question 18

Answer: C

Explanation
Stephanie has context specific effectiveness because she uses appropriate strategies to manage her stresses. She is also demonstrating coping flexibility because she will switch coping strategies when one is not working effectively.

Question 19

Answer: D

Explanation
The blood test is the unconditioned stimulus, which brings about the involuntary response of pain from the blood test.

Question 20

Answer: B

Explanation
As per the serial position effect, items at the beginning of a word list will have higher recall than words in the middle of the word list.

Question 21

Answer: D

Explanation
As condition 2 experienced delayed recall, the recency effect is likely to disappear. This would result in words at the beginning of the list having a higher recall than words at the end of the word list.

Question 22

Answer: B

Explanation
The recency effect refers to superior recall of items at the end of a word list.

Question 23

Answer: D

Explanation
Given Derek is working through the stressors he is experiencing and appears to be managing, despite his feelings of being overwhelmed, he is likely in the resistance stage of the GAS.

Question 24

Answer: A

Explanation
Explicit memory comprises of semantic and episodic memory.

Question 25

Answer: B

Explanation
Forming a mental representation of an observed behaviour explains the retention aspect of observational learning and having the desire to perform such behaviour explains the motivation aspect of observational learning.

Question 26

Answer: C

Explanation
The sensation Josie felt when turning the pages of the book was the result of actions of sensory neurons.

Question 27

Answer: A

Explanation
Motor neurons facilitate voluntary actions and this enabled Josie to move her feet.

Question 28

Answer: C

Explanation
The response by Josie to the detection of hot concrete was a spinal reflex.

Question 29

Answer: B

Explanation
A leading question is phrased in such a way as to suggest what answer is desired or to lead to a desired answer.

Question 30

Answer: A

Explanation
Cued recall is the most sensitive measure of memory retention of all the types of recall.

SECTION B: Short-answer questions

Question 1 (4 marks)

Cerebral cortex functions (students can select one of the following for 1 mark)

- Store memories relating to explicit / semantic / episodic memory
- Store memories relating to implicit / classically conditioned / procedural memory

Hippocampus functions (1 mark)

- Consolidate / formation of long term declarative memory

No other response is accepted

An example of a memory stored by the cerebral cortex relating to memory examples above – 1 mark.
An example of a memory related to the hippocampus – 1 mark

Marks relating to an appropriate example of each will need to be allocated by teacher discretion

Question 2 (7 marks)

a. The response to the spider on the sun visor was the fight-flight-freeze response / unconscious response (1 mark) and this is generated by the sympathetic nervous system (1 mark)

Note: Autonomic nervous system will not be accepted

b. By Tom avoiding driving in his car he avoids the possibility to getting bitten by a spider (1 mark). This negatively reinforces his behaviour and he is likely to continue avoiding driving in his car in the future (1 mark)

Note: Reference to perpetuating behaviour is not required for marks, as this exam focuses on Unit 3 content.

c. The antecedent is the presence of the car / needing to get in the car / needing to use the car. This then results in the avoidance behaviour and results in negative reinforcement of avoiding being bitten by the spider (1 mark)

d. The presence of Adrenaline in Tom's bloodstream at the time of the experience with the spider strengthened the memory (1 mark). This is because the amygdala was activated during the fight-flight-freeze response as the experience was emotionally arousing and connected the significant emotion with the memory (1 mark)

Question 3 (10 marks)

a.

i. The experimental design used in this study is independent groups (1 mark)

Advantages include (1 mark):

- Avoid order effects present in repeated measures design
- Reduction in the amount of time participants spend in trials
- Less time required matching participant characteristics

Disadvantages include (1 mark):

- No control over individual participant variables
- Since there are 3 conditions, the experimenter will need to find three times as many participants, compared to if they were using a repeated groups design.

ii. The population in this study are individuals who work in high stress occupations (1 mark)

b.

i. Psychological models are studied in this investigation (1 mark). This is because participants are asked to evaluated whether they are stressed, and the level of skill they have to cope, which are characteristics of Lazarus and Folkman's transactional model (1 mark)

ii. Students must relate the finding of the study to the processes of primary appraisal and secondary appraisal, relating to Psychological models of the stress response. Below is a guide for a response that addresses the findings.

- The results of the study suggest that exercise alone, or combined with focus lists as a coping strategy are effective in reducing stress compared to nothing at all. (1 mark)
- Findings that participants in the exercise alone and exercise combined with focus lists condition reporting similar levels of stress and reported coping skills at 1 month show that either strategy may be beneficial for reducing stress in the short term. Participants in both groups primarily appraise the situation as stressful and have similar evaluations of their ability to cope (secondary appraisals are similar) (1 mark)
- However over the long term, a combination of exercise and focus lists produce the highest level of reported ability to cope, compared to exercise alone. This indicates that although the primary appraisal may be that of stress, the use of focus lists provides participants with skills that increase their ability to cope and so their secondary appraisal of the situation is more positive than those who exercise alone (1 mark)
- Despite exercise not being as effective as exercise and focus lists in increasing coping skills, exercise alone is better than not engaging in anything at all, evidenced by the lower reported stress rating and increased coping ability compared to the control condition (1 mark)

Question 4 (3 marks)

1 mark allocated for each similarity (for maximum of 1 mark) and difference (for maximum of 2 marks) identified

Similarities

- Both forms of learning can be extinguished (with methods such as systematic desensitisation or CBT)
- Both forms of learning demonstrate spontaneous recovery / stimulus discrimination / stimulus generalisation
- Both forms of conditioning involve making some kind of association or connection between a behaviour and a stimulus / event in the environment

Differences

- CC is involuntary / passive / reflexive behaviour whereas OC is voluntary / active / voluntary behaviour
- Strength of learning is measured by the size of the response in CC whereas in OC strength is measured by frequency of response
- The stimulus is presented before the response in CC whereas in OC the response / behaviour is performed before the stimulus / response

Question 5 (5 marks)

i. Anterograde amnesia results in the inability to form new explicit / declarative memory following some form of brain trauma.

1 mark

ii. Alzheimer's disease is an organic condition, which results from the death of neurons in the brain, resulting in memory loss (1 mark). This cell death occurs throughout the brain but is seen in abundance throughout the cerebral cortex and the hippocampus (1 mark). As part of this cell death and dysfunction, amyloid plaques form in the synaptic gap between neurons (1 mark), and neurofibrillary tangles form within neurons which eventually leads to cell death (1 mark).

Question 6 (6 marks)

a. Taking Timothy back to the scene of the crime acts as a context dependent cue (1 mark), which is an external cue that will assist in retrieval of Timothy's memory (1 mark).

b. The method of retrieval was recall (1 mark)

c. Loftus' found that human memory is prone to being reconstructed (1 mark) during the retrieval process. If during the visit to the scene of the crime the prosecutor asked a leading question, this misleading information may have altered Timothy's memory when it was recalled and subsequently re-consolidated (1 mark).

Reference to scenario – 1 mark.

Question 7 (10 marks)

The question requires students to discuss the factors that influence ability to remember, methods used to retrieve memory and discuss the interactions of different brain regions associated with memory, in a detailed and succinct review of expected research findings.

This question draws on student knowledge from:

Unit 3, Area of study 2 – how to people learn and remember

- Processes of memory relating to brain regions associated with memory
- Factors influencing ability to remember relating to maintenance and elaborative rehearsal
- Methods used to retrieve memory relating to Recall, Recognition and Relearning.

Responses are to be marked holistically, taking into account the clarity and organisation of the content, and the degree of sophistication with which the relevant psychological concepts and terminology are integrated into the response, how well psychological concepts and terms were applied to relevant aspects of the scenario, and the extent and depth to which all requirements of the response were addressed.

Students who validly attempt all aspects specified in the question are to be awarded **at least five marks out of 10**, with the awarding of higher marks being dependent on the level of critical appraisal and application to psychological theory demonstrated.

It is acceptable for students to structure their responses in different ways, but the selected structure must ensure that required information for the response can be presented in a cohesive, logical way.

Marks	Descriptors
9-10	A comprehensive, detailed and clearly organised response, presented as a review of the literature that shows an exceptional level of understanding of the differences between maintenance and elaborative rehearsal as factors that influence the ability to consolidate memory, the relative sensitivity of measures of retention (recall, recognition and relearning), and discussion of the brain regions that are associated with the consolidation and storage of information relevant to the scenario. At this level, students will provide a succinct description of the topics required by the question: • Rehearsal method that will best result in memory encoding and

	consolidation (elaborative) • Contrast the different measures of retention, in terms of their sensitivities, in retrieving information from memory • Discuss the brain regions that are involved in the consolidation and storage of the information being given to participants in Dr Burnham's study.
7-8	Responses in this range will still show a relatively detailed and clearly organised review of the literature on memory consolidation and retention sensitivity **to most of the concepts** required by the question. There will be a lack of detail in responses in this range relative to more sophisticated responses e.g. – students may not discuss in detail the different measures of retention that could be used, and which one would be best.
5-6	A satisfactory review of the literature relating to memory storage and retrieval relating to rehearsal strategies and measures of retention will be shown. **6 mark responses** will identify all that is required for 5 marks, and *additionally* will elaborate on one of the points below; • Will contrast elaborate and maintenance rehearsal satisfactorily • Will contrast the sensitivity of retention (stating that relearning is a more sensitive measure for detecting the existence of memory than recognition, which is next sensitive, and recall, which is the least sensitive • Will contrast the function of the hippocampus and cortex in the consolidation and storage of explicit memory respectively **5 marks responses** will identify the method of rehearsal that will best result in consolidation, identification of the best measure of retention, and the brain region responsible for either consolidation or storage of such memories. Responses that show less than this cannot be awarded anything more than a 4. *NOTE: a score of 5 is a passable mark that addresses all basics that are required by the question.*
3-4	A limited understanding of the influence that rehearsal types and measures of retention was shown. Responses in this range will have demonstrated some understanding of **at least one** of the topics required in the prompt.
1-2	A very limited review of the findings. There is a lack of structure and format relevant to the prompt. Little to no analysis of the factors relating to memory were discussed / were not accurate.
0	The response provided by the student is largely irrelevant and/or inaccurate