

PSYCHOLOGY

Unit 3 – Written examination



2018 Trial Examination

SOLUTIONS

SECTION A – Multiple-choice

Question 1

Answer: C

Explanation:

Acculturation refers to the stress experienced by those who move across cultures. For example, separation from those back home.

Question 2

Answer: A

Explanation:

Being diagnosed/or a family member being diagnosed with a terminal illness would be a stressful life event.

Question 3

Answer: B

Explanation:

Losing keys is a more minor daily hassle.

Question 4

Answer: B

Explanation:

Prior to the move Brian experienced eustress as he was very excited about the move.

Question 5

Answer: A

Explanation:

Due to the recent events, the move has caused distress.

Question 6

Answer: A

Explanation:

Positive eustress activates the sympathetic nervous system.

Question 7

Answer: A

Explanation:

Negative distress also activates the sympathetic nervous system.

Question 8

Answer: A

Explanation:

Prior to the move Brian would be in the alarm reaction stage of GAS.

Question 9

Answer: B

Explanation:

Brian would be in the resistance phase when he developed flu like symptoms. Although he was clearly stressed, he was still maintaining his work and other commitments.

Question 10

Answer: D

Explanation:

Initially Brian perceived the stressor as a challenge.

Question 11

Answer: A

Explanation:

Brian subsequently viewed the stressor as a threat because of the potential loss of income or loss of a parent.

Question 12

Answer: D

Explanation:

Exercise will NOT deal directly with the problems faced by Brian

Question 13

Answer: B

Explanation:

Stress is considered psychobiological because there is usually an interpretation of a stressor/something that is causing us to worry and a physiological response such as the activation of the sympathetic nervous system.

Question 14

Answer: D

Explanation:

Dendrites receive the message.

Question 15

Answer: A

Explanation:

Symptoms of Parkinson's disease may only become apparent when dopamine drops to 80% overall and a 50% drop in the substantia nigra neurons.

Question 16

Answer: A

Explanation:

Excitatory neurotransmitters increase neural transmission.

Question 17

Answer: B

Explanation:

Inhibitory neurotransmitters work by preventing post-synaptic neurons from firing.

Question 18

Answer: D

Explanation:

Sensory neurons take information to the CNS.

Question 19

Answer: C

Explanation:

The parasympathetic nervous system is responsible for stimulating digestion.

Question 20

Answer: A

Explanation:

Knee jerk reaction is a monosynaptic reflex.

Question 21

Answer: B

Explanation:

The somatic and autonomic nervous system are respectively concerned with conscious and unconscious processes.

Question 22

Answer: D

Explanation:

The process of LTP is facilitating her acquisition of the French language.

Question 23

Answer: A

Explanation:

LTD contributes to her inability to recall German through lack of use.

Question 24

Answer: C

Explanation:

Hebb coined the phrase 'use it or lose it' to explain neurological decay of the unutilised pathways.

Question 25

Answer: D

Explanation:

Glutamate will be active when Jessica is learning French.

Question 26

Answer: D

Explanation:

Glutamate is an excitatory neurotransmitter.

Question 27

Answer: A

Explanation:

The painful injection is the UCS.

Question 28

Answer: B

Explanation:

The white jacket is the CS.

Question 29

Answer: C

Explanation:

Fear of the white jacket is the CR.

Question 30

Answer: B

Explanation:

Fear of the white jacket worn by the pharmacist/baker is a demonstration of stimulus generalisation.

Question 31

Answer: B

Explanation:

The amygdala, noradrenaline and cortisol will be activated during acquisition of this fear response.

Question 32

Answer: C

Explanation:

Extinction has occurred since Sally no longer displays the CR.

Question 33

Answer: C

Explanation:

Observational learning is based on the principles of social learning theory.

Question 34

Answer: B

Explanation:

Vicarious conditioning explains the acquisition of behaviour as a result of both vicarious reinforcement and punishment.

Question 35

Answer: C

Explanation:

Reproduction will not be possible if they cannot master the fine motor movements required.

Question 36

Answer: B

Explanation:

They have not retained a visual memory of the required actions.

Question 37

Answer: B

Explanation:

Giovanni wears a coat to remove the aversive stimulus of being cold.

Question 38

Answer: D

Explanation:

Negative punishment as she has had something valuable (her license) taken away.

Question 39

Answer: A

Explanation:

Procedural and classically conditioned memories are both implicit memories.

Question 40

Answer: B

Explanation:

The hippocampus is largely involved in the consolidation process.

Question 41

Answer: D

Explanation:

The cerebellum is largely involved in the acquisition of motor skills.

Question 42

Answer: A

Explanation:

The cerebral cortex is largely responsible for the storage of existing LTM's.

Question 43

Answer: C

Explanation:

The amygdala is involved in fear conditioning.

Question 44

Answer: C

Explanation:

Writing an essay would involve free recall.

Question 45

Answer: D

Explanation:

The recency effect would be eliminated due to the disruption to STM, by the time the first words are said, the remaining words would have vanished from STM.

SECTION B - Short-answer response

Question 1

a.

Antecedent stimulus (discriminative stimulus) – Scent of illegal drugs.

Behavioural response – the dog seeks out the illegal drugs.

Consequence – The dog is rewarded for seeking out the illegal drug – e.g. with a biscuit/snack.

One mark for correctly identifying each stage – one mark for application of each stage to the scenario.

Students may report other correct responses depending on the position they take in the sequence of the learning. Teacher discretion will need to be used in this case.

6 marks

- b. The learning might be extinguished by not providing a reward to the dog each time it seeks out the illegal substance. Eventually the dog is likely to stop the learnt behaviour due to lack of a favourable consequence.

2 marks

Question 2

Neurotransmitter – dopamine

Area of the brain – Accept any from substantia nigra, basal ganglia and the motor cortex

2 marks

Question 3

- a. The aim was to investigate the duration of short term memory in the absence of rehearsal.

1 mark

- b. The conclusions that can be drawn is that STM has a duration of approximately 18 seconds in the absence of rehearsal.

2 marks

- c. Repeated groups design – participants take part in both conditions (1). One major problem with this design is order effects, (1) whereby participants may perform better in the second condition as a result of practise or worse as a result of fatigue (1).

3 marks

- d. This disadvantage could be overcome by using counterbalancing. This occurs when half the participants to one condition first (such as doing the additional counting task) followed by the

other condition (not completing the additional counting task). The other half of the participants do the conditions in the reverse order. This counteracts any boredom/fatigue and learning effects.
2 marks

- e. Accept any suitable application to test reliability. For example, test–retest – the test should yield the same results if it is carried out with the same participants at a different time.
2 marks
- f. It was important to use nonsense trigrams as they have no meaning. If the three letters had meaning – e.g. NAB, they would automatically be processed in LTM due to elaborative rehearsal and the semantic meaning of those three letters.
2 marks
- g. Rehearsal. Can not accept chunking, as this works to increase capacity.
1 mark

Question 4

Accept any two examples of acculturative stress – language barriers, leaving loved ones back home, missing family, a change in socio-economic status, prejudice, discrimination and so on.
2 marks

Question 5

Biological processes underlying the freeze state are not completely understood. It is believed that sympathetic nervous system activation always precedes the freeze state and becomes a part of this state. When the **freeze reaction** is initiated, the energy-conserving ‘rest and relaxation’ actions of the parasympathetic nervous system dominate over the existing effects of the sympathetic nervous system activation. This leaves the organism in a physiological state involving high arousal of *both* the sympathetic and parasympathetic systems. The resulting condition is characterised by both energy-conservation and a mobilised state ready for action. This has been likened to the organism having one foot on the accelerator (the sympathetic nervous system) and one foot on the brake (the parasympathetic nervous system) at the same time.

2 marks

Question 6

- a. Neurofibrillary tangles refer to the build-up of **tau** protein **within** a neuron. However, amyloid plaques refer to the build-up of **amyloid** protein **outside** and between different neurons.
2 marks
- b. **Acetylcholine**
1 mark
- c. Not until after death via a post-mortem.
1 mark

Question 7

a.

A **spinal reflex** is an unconscious, involuntary and automatically occurring response to certain stimuli without any involvement of the brain. It is often referred to as a *reflex arc* because the response to an incoming stimulus is automatically ‘reflected back’ from the spinal cord without any initial input from the brain and before the brain processes a conscious perception of the stimulus. For example, if you were to touch the hot handle of a frying pan, you would automatically withdraw your hand to release the handle before the sensory information travels all the way to your brain and therefore before pain is actually experienced. The sensory receptors in your finger would send messages to your CNS, but the first point of contact in the CNS is the spinal cord. It responds with a message via motor neurons to move the appropriate muscles in your hand to release the hot object and withdraw the hand. Interneurons facilitate communication between sensory and motor neurons.

Any suitable example of a spinal reflex is accepted for full marks, as long as the response occurs at the spinal level only.

2 marks

b.

Damage or disease anywhere along the reflex arc can cause a reflex to be absent or abnormal. For example, when the knee is tapped on the patellar ligament, the sensory nerve that receives this stimulus carries the information to the spinal cord, where it is relayed to a motor nerve. This normally causes the quadriceps muscle at the front of the thigh to contract and jerk the leg up. The leg begins to jerk up while the brain is just becoming aware of the tap. Absence of this patellar reflex could indicate damage within sensory or motor pathways, or a spinal cord injury in the lower back area, such as that experienced by a quadriplegic patient.

2 marks

Extended response question

Question 8

Case study is an intensive, in-depth investigation of an individual, small group, organisation or situation.

Benefits:

- Case studies allow us to form hypothesis that can be tested experimentally (e.g. frontal lobe is connected to personality).
- Qualitative, rich, in depth data.
- It allows us to study situations that can't ethically be manipulated.

Drawbacks:

- Lacks generalizability as they are based on the findings from one person or a small group.
- We do not study behaviour scientifically before the experiment.
- Do not allow for easy replication, we often have to wait for events such as HM's circumstances to occur naturally.

- HM could recall events prior to his surgery apart from some details of the final two years before surgery. This is because these memories may have still been undergoing the consolidation process. Memories prior to this are likely to have been consolidated in the hippocampus and since moved to other sub-cortical areas.
- The fact that HM cannot create new long-term memories, but can recall long-term memories that existed well before his surgery suggests that encoding and retrieval of long-term memory information may also be mediated by distinct systems. The HM case study also demonstrated that the hippocampus is a key brain region involved in consolidating new long-term memories. However, his case study also suggests that the region of the brain involved in consolidating new LTM's might be different to the region that stores pre-existing LTM's since he could recall all events prior to surgery. Perhaps once memories are consolidated in the hippocampus, they then move to other sub-cortical areas of the brain.
- HM had **anterograde amnesia** since he recalled all events before his surgery but could not create new LTM's.
- HM's STM appeared intact since he could recall information as long as he kept rehearsing it and could hold a very short conversation. However, his LTM was impaired. This **supports** the suggestion of the multi-store model that we have a separate and distinct STM and LTM. He could also store and consolidate new procedural memories. This suggests that such memories may utilise other areas of the brain, rather than the hippocampus. It is likely that HM could complete such procedural tasks because his cerebellum was unaffected by the surgery

Marks are allocated for this question based on the comprehensive nature of the response and the degree to which the response is well integrated and addressed each point.

A 9-10 mark response will show features similarly to the response above

A 1-3 mark response will not address all of the required points (in great detail)

A zero mark response will contain no relevant information, or be a blank response

Due to the subjective nature of marking responses of this nature, aspects of teacher discretion will need to be used to mark this response in addition to the information in this marking guide.

10 marks