

# PSYCHOLOGY

## Unit 3 – Written examination



## 2017 Trial Examination

### **SOLUTIONS**

**Section A – Multiple-choice**

**Question 1**

*Answer:* A

*Explanation:*

Brain and spinal cord are the two key parts of the CNS.

**Question 2**

*Answer:* D

*Explanation:*

Aishia's sympathetic nervous system will be active when she felt nervous.

**Question 3**

*Answer:* D

*Explanation:*

Jacqui's sympathetic nervous system was active when she felt excited.

**Question 4**

*Answer:* C

*Explanation:*

James' parasympathetic nervous system was active when he felt relaxed.

**Question 5**

*Answer:* A

*Explanation:*

Marcus picking up his pen is controlled by the somatic nervous system.

**Question 6**

*Answer:* D

*Explanation:*

Hindbrain, forebrain and midbrain are the three broad structures of the brain.

**Question 7**

*Answer:* D

*Explanation:*

Lewis' elevated heart rate would be a function of the sympathetic nervous system.

**Question 8**

*Answer:* C

*Explanation:*

When Lewis' heart rate dropped and he felt thirsty, this is likely to be a result of action of the parasympathetic nervous system.

**Question 9**

*Answer:* A

*Explanation:*

Motor neurons within the peripheral nervous system would have controlled the behaviour of placing his foot on the brake.

**Question 10**

*Answer:* C

*Explanation:*

The parasympathetic nervous system returns the body back to homeostasis.

**Question 11**

*Answer:* A

*Explanation:*

The somatic NS is largely responsible for this action.

**Question 12**

*Answer:* D

*Explanation:*

The sensation of feeling the fly would be processed in the right parietal lobe

**Question 13**

*Answer:* D

*Explanation:*

The left motor cortex in the frontal lobe would be responsible for initiating this movement.

**Question 14**

*Answer:* B

*Explanation:*

Efferent (motor) neurons are responsible for initiating movement.

**Question 15**

*Answer:* C

*Explanation:*

Sensory neurons would have relayed this information to interneurons.

**Question 16**

*Answer:* A

*Explanation:*

Afferent pathways would have been used to communicate this message.

**Question 17**

*Answer:* A

*Explanation:*

The double blind procedure would be the most effective for reducing both experimenter effects and the placebo effect.

**Question 18**

*Answer:* A

*Explanation:*

Sally is experiencing distress, Michael is experiencing eustress.

**Question 19**

*Answer:* B

*Explanation:*

Sally perceives the situation as a threat, Michael perceives it as a challenge.

**Question 20**

*Answer:* A

*Explanation:*

Sally's sweating and subsequent thirst is a result of the ANS.

**Question 21**

*Answer:* D

*Explanation:*

The dendrites receive the message from the presynaptic neuron.

**Question 22**

*Answer:* C

*Explanation:*

Myelin insulates the axon.

**Question 23**

*Answer:* A

*Explanation:*

The cell body is responsible for cell metabolism.

**Question 24**

*Answer:* C

*Explanation:*

Glutamate has an excitatory effect. However, GABA has an inhibitory effect.

**Question 25**

*Answer:* B

*Explanation:*

The amygdala is responsible for fear conditioning.

**Question 26**

*Answer:* A

*Explanation:*

The hippocampus will be active when she is recalling facts.

**Question 27**

*Answer:* B

*Explanation:*

Biofeedback is a stress management technique that involves biological techniques.

**Question 28**

*Answer:* C

*Explanation:*

Thinking she will lose her job if the presentation does not go well is an example of a catastrophic thought.

**Question 29**

*Answer:* B

*Explanation:*

Biofeedback is not an example of an emotion focused stress management technique.

**Question 30**

*Answer:* B

*Explanation:*

LTP refers to strengthening at the point of the synapse.

**Question 31**

*Answer:* A

*Explanation:*

Glutamate is a neurotransmitter involved in strengthening at the point of the synapse.

**Question 32**

*Answer:* D

*Explanation:*

Neurohormones are slower in their functioning than neurotransmitters.

**Question 33**

*Answer:* A

*Explanation:*

When learning occurs neuronal structure and function changes.

**Question 34**

*Answer:* D

*Explanation:*

LTP strengthens synapses.

**Question 35**

*Answer:* B

*Explanation:*

LTP and LTD are activity dependent.

**Question 36**

*Answer:* B

*Explanation:*

Long term depression refers to the weakening of an existing synapse over time when frequency of electrical stimulation is reduced.

**Question 37**

*Answer:* D

*Explanation:*

Health psychology refers to The study of how psychological factors can impact physical health

**Question 38**

*Answer:* B

*Explanation:*

Banks prior to conditioning refers to the NS in this situation.

**Question 39**

*Answer:* D

*Explanation:*

Fear in response to the robbery is the UCR.

**Question 40**

*Answer:* C

*Explanation:*

The violent robbery is the UCS.

**Question 41**

*Answer:* A

*Explanation:*

Sensory memory has an unlimited capacity and up to 3-4 seconds duration (e.g. for echoic).

**Question 42**

*Answer:* C

*Explanation:*

The cerebellum is largely responsible for processing procedural memories.

**Question 43**

*Answer:* A

*Explanation:*

Cued recall is the most sensitive level of recall (not relearning as this is not recall but the most sensitive level of retention).

**Question 44**

*Answer:* D

*Explanation:*

Multiple choice questions use recognition.

**Question 45**

*Answer:* D

*Explanation:*

The recency effect would be eliminated due to the disruption to STM

## SECTION B - Short-answer response

### Question 1

a.

**Alarm reaction** – The sympathetic branch is activated, leading to an increase in heart rate, release of glucose and so on. This would occur when Blake initially had a disagreement with his Manager.

**Resistance** – When the stressor is prolonged over a long period, the stress hormones remain in the body and this can begin to cause ‘wear and tear’ on the body. This can occur even if the heightened response to stress has subsided to some extent and heart rate has decreased. This may occur when Blake has to work long hours to try to meet unrealistic targets.

**Exhaustion** – When the stressor is not removed we will pass the resistance stage and experience a breakdown in physiological systems (e.g. we develop illnesses due to collapse of the immune system). The breakdown may also be psychological in nature. Blake has developed flu like symptoms.

6 marks

- b. There is an overemphasis on biological factors at the expense of psychological factors. For example, it does not explain that different individuals will perceive the stressor differently.

2 marks

- c. Lazarus and Folkman developed the transactional model of stress which emphasises psychological factors. The model suggests stress involves an encounter (transaction) between an individual and their external environment, and that a stress response depends on the individual's interpretation (appraisal) of the stressor and their ability to cope. Thus different people may perceive the stressor differently as well as their ability to cope. GAS assumes different individuals go through the three identical stages.

3 marks

### Question 2

- a. In a cross sectional study, data are collected at one time from participants of all ages and different age groups are compared. This is a form of independent groups design.

2 marks

- b. Strengths include: All data are collected at once and are readily available; cheaper and less time-consuming than **longitudinal studies** and less chance of participants ‘dropping out’ of the study

1 mark

- c. An ethics committee may contain both psychologists and lay persons. Its role is to assess research proposals and indicate any changes that must be made or additional procedures that are required before it will give approval for the study to proceed.

3 marks

### Question 3

The role of GABA in Parkinson’s disease is still being researched. However, it is believed that neurons in the midbrain that release dopamine also release GABA, which inhibits or lowers normal neuron activity. The amount of GABA present in the brain decreases in Parkinson’s disease sufferers, possibly contributing to symptoms such as tremors and restless leg syndrome. A drug that can be taken by Parkinson’s disease patients binds with the GABA receptors and mimics the action of GABA. There is also evidence that, to some extent, GABA blocks the effect of dopamine, which is already depleted in people with Parkinson’s disease.

3 marks

### Question 4

Acetylcholine and glutamate are believed to be two important neurotransmitters involved with learning and memory. Neurotransmitters that do not function normally can cause problems for the nervous system. For instance, acetylcholine affects many things including memory. A decrease in the concentration of acetylcholine in the central nervous system is the hallmark of both progressive dementia, and Alzheimer’s disease, a condition associated with severe memory loss and disorientation.

Neurohormones such as adrenaline have been found to be involved in the formation of emotional memories and this hormone is involved in learning such as fear conditioning.

4 marks

**Question 5**

- a. Explicit memory involves memories of facts, names, images, and events; also called declarative memories. For example, knowledge of capital Cities around the world. Implicit memories include memories of skills, emotions, preferences and dispositions; also called procedural or non-declarative memories. For example, recalling how to drive a car.
- b. Implicit memories are processed in the amygdala and possibly the cerebellum. Explicit long term memories are often consolidated in the temporal lobe, and more specifically the hippocampus.

2 marks

**Question 6**

- a. Accept any suitable non-leading question :  
Example – Describe the offender's appearance.

1 mark

- b. Alara will recall more if she experiences the same psychological state during recall to what she experienced during the theft. For example, if she felt fear, she will recall more when she feels fear again.

1 mark

- c. Memory is fallible in that it is often not an exact replica of events. Memory can be influenced by pre-existing ideas and subsequent events.

1 mark

**Question 7**

Long-term depression refers to the weakening of an existing synapse over time when frequency of electrical stimulation is reduced. Long term depression may occur after the Psychology exam when we no longer revise the material that is not needed. However, long-term potentiation refers to the strengthening of synapses after they have been electrically stimulated at a particularly frequency. Strengthening continues when the same electrical frequency is fired over time. LTP would occur in the process of revising psychology.

3 marks

**Question 8**

Stress is considered psychobiological as it involves both a psychological and physiological response to internal or external sources of tension (stressors) that challenge a person's ability to cope. The stress experienced will often result in a physiological response, such as activation of the sympathetic nervous system; as well as a psychological response such as an interpretation of the stressor as a threat/loss/challenge.

1 mark

### **Extended response question**

Holmes and Rahe wanted to investigate the social factors involved in stress. They developed a Social Readjustment Rating Scale (SRRS) of stressful life events.  
Their study is outlined below:

#### Aim:

To investigate if stressful life events were associated with stress related illness.

#### Method:

Holmes and Rahe developed a rating scale (SRRS) for measuring stress. They asked 394 participants of various ages and sociocultural backgrounds to rate the impact of various life changes. From this they developed the SRRS which consists of 43 life events that involve change and some level of adaption. Each event was allocated a numerical value of life changing units (LCU's). The top rated event was 100 (death of a spouse) down to 11 (minor violation of the law such as jaywalking).

#### Results:

Those exposed to a score of 200+ LCU's within a 12 month period are more prone to physical and psychological stress related illness and disease. The likelihood of stress related illness and disease diminishes with the LCU's score.

#### Conclusion:

Stressful life events are associated with physical and psychological illness and disease.

### **Question 9**

a. The data collected was quantitative since a LCU's score is provided.

1 mark

b. This type of data is more objective than qualitative data.

1 mark

### Question 10

Possible daily hassles –

- Traffic
- Being late
- Financial worries
- Disagreements with friends/family
- Workload,
- Travel

Aim –

To investigate if the accumulation of daily hassles can be a contributing factor to stress related illness.

Methodology –

Survey/questionnaire/interview might be used to assess the number and frequency of daily hassles within a time period, as well as the number of physical illnesses experienced within the same time period.

A weakness of questionnaires/surveys/interviews is that they are subjective and individuals may not provide truthful responses. They may experience social desirability bias whereby they provide answers that they believe are desirable (e.g. in this example they may not want to appear stressed by daily encounters they face and consequently underestimate the number of daily hassles).

The degree of stress caused by each event is subjective so it is hard to allocate numerical values for each event.