

## VCE Psychology Unit 1

### 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      A**

Hippocrates believed that the brain was the source of all thoughts and emotions. Those that took the opposite side of the debate, such as Aristotle, believed that the heart was where all mental processes occurred.

**Question 2      C**

Phrenologists believed that the parts of the brain that are used more frequently would stimulate greater development than parts of the brain used less frequently. They believed this would cause the skull to push out the surrounding skull, causing a bump on the head that could be observed or felt externally.

**Question 3      D**

Brain ablation is a procedure where specific parts of the brain are removed, destroyed or disabled. Brain ablation experiments have contributed to our knowledge of brain structure and function.

**Question 4      A**

A research hypothesis is a testable prediction of the relationship between two or more variables within a population. It is not based on a sample and, to be a scientific hypothesis, it should always be testable.

**Question 5      D**

A CT scan is a structural neuroimaging technique. fMRI and PET scans are functional neuroimaging techniques. ECG is a technique used to detect, amplify and record the electrical activity in the heart.

**Question 6      C**

The somatic nervous system receives information from the sensory receptors; it is a branch of the peripheral nervous system. The autonomic nervous system regulates automatic, reflexive responses that assist with survival. The central nervous system consists of the brain and spinal cord.

**Question 7      D**

A spinal reflex only involves processing by the peripheral nervous system and the spinal cord. A spinal reflex never involves the brain, which is part of the central nervous system. It is an automatic process, not a conscious response.

**Question 8      C**

Skeletal muscles are controlled by the somatic nervous system. The autonomic nervous system controls various glands, smooth muscles and visceral organs, such as the lungs.

**Question 9      C**

The parasympathetic nervous system is a sub-division of the autonomic nervous system. The brain is part of the central nervous system, the sympathetic nervous system is a division of the peripheral nervous system, and the somatic nervous system is a division of the peripheral nervous system.

**Question 10      A**

The sympathetic nervous system assists the body to survive when threatened by activating the fight-flight-freeze response. The somatic nervous system is responsible for detecting incoming sensory stimuli. The parasympathetic nervous system restores the body to a steady state of functioning once a threat has passed, and is active during most of the average person's day as it helps to maintain homeostasis.

**Question 11      C**

The right hemisphere of the brain specialises in spirituality, appreciation of music and art, and other similar functions. The left hemisphere specialises in mathematical calculations, logical and deductive reasoning, and moving the opposite side of the body.

**Question 12      C**

Myelin is a fatty coating along the length of the axon that acts to insulate the neurons. It is not a continuous covering along the axon; it is made of segments separated by gaps called nodes of Ranvier. Myelin is made by Schwann cells and oligodendroglia, not astrocytes. Myelin is not found in all neurons although it is commonly found.

**Question 13      D**

Interneurons help to connect sensory and motor neurons. Neurons that transmit information to the brain are referred to as sensory or afferent neurons. Motor neurons are efferent as they transmit outgoing information from the brain.

**Question 14      C**

Microglia act as the main form of immune defence for neurons. They are found in the peripheral nervous system and central nervous system. Oligodendroglia and Schwann cells produce and maintain myelin. Astrocytes are shaped like stars.

**Question 15      A**

The forebrain contains the hypothalamus, thalamus and cerebrum. The hindbrain consists of the pons, medulla and cerebellum.

**Question 16      B**

Functions of the medulla include controlling important life-sustaining functions such as heart rate and breathing. The cerebellum coordinates fine muscle movements, while the visual cortex processes visual stimuli. The reticular formation is responsible for regulating alertness.

**Question 17      B**

The structure in the brain that is responsible for filtering incoming sensory information is the thalamus. The hypothalamus helps with maintaining an internal steady state (homeostasis). The cerebellum coordinates muscle movements and assists with posture and balance. The pons is mostly involved with sleep, dreaming and arousal from sleep, as well as control of breathing.

**Question 18      C**

The increase in brain size and volume is due to the development of myelin in a process called myelination as well as synaptogenesis, a process by which the number of synapses increases. The number of neurons does not increase, nor do neurons thicken or increase in size. The change in brain size and volume is also not due to the development of glial cells.

**Question 19      C**

Synaptic pruning is a not short-term process. It is a long-term process with a burst during infancy and then again in adolescence. Weak and unused synaptic connections are pruned, which helps to fine-tune the brain. Synaptic pruning usually occurs in the sensory areas first and then in the association areas of the brain.

**Question 20      B**

Dr James was using data that she collected herself from first-hand sources, which makes the data primary. If it were secondary data, Dr James would have used data collected by another person/s. The data is numerical and not descriptive, which makes it quantitative, not qualitative.

**Question 21      D**

The changes occur in an orderly, sequential manner, although not always at the same rate. The changes are more rapid in infancy and adolescence. Changes occur first in the hindbrain regions and then progressively move upward from the lower to the higher regions. As the brain develops between infancy and adulthood, the volume of the brain increases due to myelination and synaptogenesis, not because of an increase in neurons.

**Question 22      D**

When conducting studies, researchers aim to control extraneous variables to ensure that the independent variable is responsible for changes in the dependent variable.

**Question 23      D**

Acquired brain injuries occur after birth. They can be caused by bacterial infection or long-term use of alcohol. Their onset can be sudden or gradual (insidious).

**Question 24      D**

Some of the psychological changes noted in Phineas Gage following his accident were difficulty with goal-directed behaviour and planning for future activities. He did have difficulty with motor activities, but this was a biological factor. Gage also had difficulty maintaining relationships with his friends and with keeping a job; however, these difficulties were social in nature.

**Question 25      D**

The area of the brain that is most commonly affected in cases of spatial neglect is the parietal lobe because spatial neglect is an attentional disorder. It is not a problem with vision, so the visual cortex is not involved. It does not involve functions stemming from the temporal lobe. It is not a motor problem and not does involve the motor cortex.

**Question 26      D**

The most significant risk factor for developing Parkinson's disease is age. Parkinson's disease involves a reduction of dopamine-producing neurons in the substantia nigra, subsequently causing a reduction in the amount of dopamine produced. The actual cause of the disease is unknown (idiopathic). Parkinson's disease may include symptoms such as loss of smell, disturbed sleep or mental health problems. Loss of taste is not a symptom of Parkinson's disease.

**Question 27      B**

Monozygotic twins are conceived when one sperm fertilises one ovum. Monozygotic twins have identical genotypes, but their phenotypes may be slightly different, depending on the influence of the environment. Fraternal twins (non-identical) are conceived when two sperm fertilise two ova.

**Question 28      B**

An infant beginning to crawl is considered to be maturation, a part of their developmental process. An infant cannot learn to crawl until their body is physically mature or ready. As such, it is influenced by genetic programming, or nature.

**Question 29      C**

The sensitive period in which a person learns their first language continues to the age of twelve, with the period window gradually closing from about the age of seven. This is the period when an individual best learns their first language.

**Question 30      D**

In Ainsworth's strange situation test, the infant demonstrates separation anxiety – anxiety at being apart from their caregiver. When a stranger enters the room and speaks with the caregiver while the infant is in the room, the infant may show signs of distress; this is known as stranger anxiety. An infant demonstrates disorganised attachment through inconsistent or odd behaviours when separated from or reunited with their caregiver. An infant demonstrates insecure resistant attachment when they do not seek close contact with their caregiver.

**Question 31      D**

Piaget used the term accommodation to refer to how children change or modify a pre-existing idea so that it can fit in with new information. Assimilation refers to when an infant encounters new information and fits it into an existing concept (or schema). Accommodation occurs when an existing schema is changed or restructured to fit new information.

**Question 32      B**

The main ethical concern with the group's method of selecting the sample of students is the lack of informed consent. Obtaining informed consent should have been the main ethical guideline that the group complied with. If the group had obtained participants' informed consent, the participants would have been informed of their withdrawal rights and their right to confidentiality. Debriefing would have only been required if some form of deception has been used in the study.

**Question 33      C**

The children are playing a make-believe game. According to Piaget, they are demonstrating symbolic thinking, which is characteristic of the pre-operational stage, not the sensorimotor or concrete operational stages. Egocentrism refers to the ability of a child to only view the world from their own perspective and not that of another person.

**Question 34      B**

Erikson believed that the psychosocial crisis of autonomy versus shame and doubt occurs between the ages of 3 to 5 years. The psychosocial crisis for children aged from 18 months to 3 years is trust versus mistrust. For children aged 5–12 years, it is initiative versus guilt. For children aged 12–18 years, it is identity versus role confusion.

**Question 35      D**

The girls wearing pajamas to school is considered normal from a situational approach to normality. The girl's behaviour would not be considered normal from a statistical approach because numbers or percentages were not provided. The sociocultural approach is not appropriate because the situation does not consider how the girls compare to society's expectations. Neither is it appropriate from a historical approach as differences in time periods are not considered.

**Question 36      C**

Persistent bullying in the workplace is a social factor that could contribute to a mental disorder. Very high levels of a neurotransmitter (such as dopamine) and genetic vulnerability are biological factors, not social factors. Atypical behaviours are not necessarily interpersonal and thus are not classified as social factors.

**Question 37      B**

A mental health problem is usually less severe and shorter in duration than a psychological condition (mental disorder). A mental health problem may resolve itself in time and does not require medication as treatment. Although it may cause some distress, it does not severely interfere with everyday functioning. A mental health problem does not need to be diagnosed by a mental health professional.

**Question 38      C**

Agoraphobia is an anxiety disorder. Bipolar and major depression are mood disorders, and schizophrenia is a psychotic disorder.

**Question 39      D**

Michael was experiencing delusions of reference as he thought the radio announcers were speaking specifically to him. Michael did not suffer from delusions of control, because based on the information provided, he did not seem to believe that an external force or company was trying to control him. He did not believe he was being targeted or followed, as he would if he was suffering from delusions of persecution. Michael did not believe himself to be someone of great importance and so he was not experiencing delusions of grandeur.

**Question 40      C**

Positive symptoms of schizophrenia are thoughts, feelings and behaviours that are present in addition to the individual's normal manner of functioning; they include hallucinations, delusions and disorganized thinking and speech. Feeling positive about the future is a positive emotional state that is not to be confused with a positive symptom. Negative symptoms of schizophrenia include loss of motivation or affective flattening.

**SECTION B****Question 1** (2 mark)

Descartes believed that the mind and body connected in the brain (pineal gland), enabling the mind and body to interact and influence each other.

1 mark

Descartes believed that the mind is an abstract, non-physical entity, whereas the body is a fleshy, physical structure.

1 mark

**Question 2** (2 marks)

Penfield used electrical stimulation of the brain (ESB).

1 mark

Penfield electrically stimulated specific areas of patients' cerebral cortices and patients were asked to report on their experiences. He methodically labelled (tagged) each area of the brain with its corresponding function, enabling him to construct a map.

1 mark

**Question 3** (3 marks)

a. *Any one of:*

- pupil dilation
- dry mouth (reduced saliva production)
- increased heart rate
- bronchodilation
- increased breathing rate
- release of glycogen in the muscles
- relaxation of the muscles at the neck of the bladder
- reduced digestive processes

1 mark

b. the sympathetic nervous system

1 mark

c. the parasympathetic nervous system

1 mark

**Question 4** (1 mark)

The function of a synapse is to transfer information from one neuron (pre-synaptic) to the next neuron (post-synaptic). This allows for communication between neurons.

1 mark

**Question 5** (2 marks)

An adult has fewer synapses than a three-year-old child because synaptic pruning has occurred.

1 mark

In an adult, the weak or unused synaptic connections that were formed in earlier years are removed to improve efficiency of the brain.

1 mark

**Question 6** (4 marks)

Re-routing: Re-routing occurs when an undamaged neuron finds new connections with other neurons to bypass a damaged area.

2 marks

Sprouting: Sprouting occurs when the dendrites and dendritic spines branch out and grow to form new connections with other neurons.

2 marks

*Award 1 mark for each mechanism.*

*Award 1 mark for each appropriate description.*

**Question 7 (5 marks)**

a. *Any one of the following motor symptoms:*

- tremor
- muscle rigidity
- slowness of movement (bradykinesia)
- instability of posture

1 mark

*Any one of the following non-motor symptoms:*

- loss/decrease in sense of smell
- change in the fluency of speech
- tiredness
- disturbed sleep
- constipation
- mental health problems such as anxiety or depression

1 mark

b. *Any one of:*

- Animal research led to the development of the drug Levodopa (L dopa).
- Animal research led to the development and use of deep brain stimulation as treatment.

1 mark

c. *Any one of:*

- fMRI: This neuroimaging technique has lead to improved accuracy of diagnosis and earlier diagnosis of Parkinson's disease. It can also be used to monitor the patient's response to therapy.
- PET: This neuroimaging technique has enabled early and accurate diagnosis as well as determination of the severity of the illness by identifying the changes in specific parts of the brain.

2 marks

*Award 1 mark for identification of an appropriate neuroimaging technique.*

*Award 1 mark for explanation of the neuroimaging technique.*

**Question 8 (2 marks)**

The twins carry the same set of genes within their cells, which determines the 'blueprint' of development. This is influenced by nature.

1 mark

However, the environment (the nurture side of the debate) can alter the expression of the genes to a certain extent. For example, being outside swimming on a regular basis would have tanned Lauren's skin, bleached her hair and made her more muscular. The regular swimming training would have improved her skill and fitness, thereby improved her swimming times.

1 mark

**Question 9 (2 marks)**

Deprivation of sight occurred during the first few months of the kitten's life – a critical time for the development of vision. Hence, the kitten has visual impairments even after the operation.

1 mark

A critical period is a period of time in an organism's development when the organism is most vulnerable to deprivation of stimuli or experiences.

1 mark



**Question 10** (2 marks)

For example, any one of:

- Abstract thinking: A child who has moved from the concrete operational stage to the formal operational stage can think and reason with abstract concepts that are not required to be physically present. They can follow a sequence of thought and logic when problem solving.
- Idealistic thinking: A child who has moved from the concrete operational stage to the formal operational stage begins to think about global issues, themselves, and their own characteristics and possible pathways in life.

2 marks

*Award 1 mark for identification of one significant change.*

*Award 2 marks for identification of one significant change **and** description of the change.*

*Note: Deductive reasoning and scientific reasoning are also acceptable.*

**Question 11** (6 marks)

- a. the difference in temperature (°C) 1 mark
- b. the level of alertness (as measured by speed on a mental speed test) 1 mark
- c. convenience sampling 1 mark
- d. quantitative data 1 mark  
The data is numerical and not descriptive. 1 mark
- e. Any one of:
  - Josie must have obtained informed consent from participants.
  - Josie must have informed participants of their withdrawal rights.
  - Josie must have ensured that results and names of the participants remain confidential.
  - Josie must have ensured that the participants agree to be part of the study of their own free will.
  - The participants must have been debriefed at the conclusion of the study.

1 mark

**Question 12** (2 marks)

Maladaptive behaviours are behaviours that interfere with a person's ability to adapt or effectively adjust to their environment. When maladaptive behaviours disrupt everyday functioning, they are dysfunctional behaviours.

1 mark

Possible example: When a person does not shower or bathe regularly, this maladaptive behaviour becomes dysfunctional as it is expected that people maintain their personal hygiene.

1 mark

*Note: Other appropriate examples are acceptable.*

**Question 13** (2 marks)

Self-stigma occurs when an individual with a mental disorder accepts and believes other people's negative attitudes about themselves.

1 mark

This leads to low self-image and low self-esteem, which interferes with the individual seeking help.

1 mark

**Question 14** (5 marks)

**a.** *Any two of:*

- affective flattening (no emotional highs or lows)
- avolition (lack of motivation)
- anhedonia (lack of enjoyment of usual activities)
- alogia (poverty of speech)

2 marks

**b.** The first hit is genetic vulnerability.

1 mark

The second hit is an environmental stressor such as poverty or loss of employment.

1 mark

**c.** The main treatment is anti-psychotic medication.

1 mark

**Question 15** (10 marks)

Attachment is a deep emotional bond that develops between two people. In the early stages of life, attachment forms between infant and caregiver. Infants are capable of forming attachments to more than one caregiver, such as the mother and the grandmother, or the mother and the father.

Attachment is a two-way relationship, and the characteristics of both infant and caregiver play major roles. The type of attachment that forms during infancy can have a profound and lasting effect on an individual for the rest of their life. It affects the nature of their future relationships. For example, securely attached infants tend to develop good self-esteem and trusting, long-lasting relationships. In contrast, insecure attachment may lead to poor self-esteem and an inability to form close relationships.

**The three main types of attachment**

1. **Secure:** A securely attached infant is confident that they can depend on their caregiver to look after them and attend to their needs. In the presence of their caregiver, they are confident to explore the environment around them. They are usually upset when their caregiver leaves but are always happy when they return, seeking physical comfort from them.
2. **Insecure-avoidant:** An insecure-avoidant infant tends to treat their caregiver like a stranger. They do not readily seek physical contact and are not fussed when their caregiver leaves or returns to the room.
3. **Insecure-resistant:** An insecure-resistant infant does not seem to be at ease or relaxed, even when their caregiver is nearby. If they are separated from their caregiver, they become highly distressed. However, when their caregiver returns, they cry for attention and when picked up they wriggle to be put down again. The infant seems to be confused as to what they needs from their caregiver, possibly as a consequence of the lack of dependability of their caregiver.

**The three major influences on development of the type of attachment**

1. **Genetics:** It is thought that infants form attachments in order to increase their chances of survival. When infants cry, smile or show other similar behaviours, the purpose is to attract the attention of the caregiver so that their caregiver may respond with appropriate behaviours (such as feeding or holding the infant). The type of attachment that develops is then determined by the temperament of the infant and the interactions that occur between infants and their caregivers.
2. **Temperament:** The temperament of the child, or the way that the infant behaves and responds to the caregiver, has a profound influence on the reactions from the caregiver. There are three main types of temperament. Caregivers respond more quickly and with more attention to infants with easy temperament compared to infants with difficult temperaments.
  - **Easy:** Infants with easy temperaments are easy-going, content and happy, and adapt to new people and new experiences quite easily, without too much trouble.
  - **Difficult:** Infants with difficult temperaments do not form a regular routine of sleeping or feeding, and when changes in routines occur, they do not adapt easily to those changes. They tend to be more irritable, cry frequently and show excessive emotional responses, such as tantrum throwing when upset or frustrated.
  - **Slow to warm up:** Infants with slow-to-warm-up temperaments do not form regular routines as smoothly as infants with easy temperaments. They are slower when responding to new people or situations, although they do not respond with intense crying or tantrums. When they have adapted to a new situation or person, they are quietly alert and curious.

3. Experiences early in life: Various experiences in early life influence the development of an infant's type of attachment.
- When a caregiver is sensitive to, and responds appropriately to the needs of their infant, a secure attachment usually develops – for example, when an infant cries and their caregiver responds quickly and knows whether the infant needs to be fed, soothed or have its nappy changed. In contrast, if the caregiver is slow to respond to their infant's cries and if they misinterpret their needs, an insecure attachment develops.
  - If the caregiver does not provide much close physical contact to comfort their infant, this also influences the emergence of insecure attachment.
  - The caregiver's attitude towards parenting has an important influence on the development of the type of attachment. The caregiver's own personal upbringing and attachment style with their parent/s is also believed to have had a profound influence. For example, where the caregiver has felt neglected emotionally and/or physically as they were growing up, they are more likely to demonstrate patterns of behaviours that would cause insecure attachment to develop between themselves and their infant.
  - Post-natal depression often influences the formation of insecure attachment.
  - The environment in which the infant is raised has an impact. This includes demographic factors, such as the number of siblings in the home, if caregivers are stressed about finances, loss of a parent or tension in relationships between other people or caregivers in the home.
  - The cultural background of the infant and their caregiver can also influence attachment. For example, infants in German households may develop insecure-avoidant attachment as the children are taught to be independent from an early age.

10 marks

*Marks allocated will depend on the quality of the response as follows:*

*9–10 high; 7–8 medium–high; 5–6 medium; 3–4 low–medium; 1–2 low; 0 not shown.*

*Note: The question asks for an article, which indicates that it should be written in prose style.*

*The inclusion of subheadings is acceptable. The response shown here is more detailed than a student would be expected to write. This is so that teachers may advise their students of the range of information that could be included.*