PSYCHOLOGY

Unit 1 – Written examination

2018 Trial Examination

SOLUTIONS

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

Question 1

Answer: A

Explanation:
The Ancient Egyptians believed that the heart was the centre of reason and intelligence.

Question 2

Answer: B

Explanation:
The Ancient Greeks believed that the brain was the seat of all mental processes.

Question 3

Answer: D

Explanation:
According to Gall, friendship, ideality and hope are all examples of brain organs.

Question 4

Answer: B

Explanation:
Phrenology is a process that involves observing the bumps on someone's head to determine characteristics.

Question 5

Answer: B

Explanation:
The Autonomic Nervous system is responsible for involuntary responses such as a stomach growling.

Question 6

Answer: A

Explanation:
The medulla controls digestion.

Question 7

Answer: C

Explanation:
The thalamus receives initial information from her nose that her meal smells delicious.

Question 8

Answer: A

Explanation:
Motor neurons control voluntary movement.

Question 9

Answer: A

Explanation:
CT, PET and MRI are examples of neuroimaging techniques.

Question 10

Answer: B

Explanation:
Electrical brain stimulation is able to map the brain while the patient is awake.

Question 11

Answer: A

Explanation:
A CT scan is a non-invasive procedure where a high-resolution 3D image of the brain is captured.

Question 12

Answer: A

Explanation:
The function of the peripheral nervous system is to communicate information from the body's organs, glands, and muscles to the CNS.

Question 13

Answer: A

Explanation:
The central nervous system is comprised of the brain and spinal cord.

Question 14

Answer: D

Explanation:
The role of glial cells is to surround neurons and hold them in place, to insulate one neuron from another and to remove dead neurons.

Question 15

Answer: B

Explanation:
The main function of the hindbrain is to support bodily functions and link the spinal cord and brain.

Question 16

Answer: A

Explanation:
The elimination of excess neurons and synapses is known as synaptic pruning.

Question 17

Answer: D

Explanation:
During frontal lobe development in adolescence there is a burst of production of cortical grey matter.

Question 18

Answer: B

Explanation:
The corpus callosum enables communication between the left and right hemispheres.

Question 19

Answer: B

Explanation:
The convoluted structure of the cerebral cortex increases its surface area.

Question 20

Answer: A

Explanation:
Periods in development where there is social sensitivity to certain environmental factors are known as sensitive periods.

Question 21

Answer: A

Explanation:
The myelination period begins before a baby is born.

Question 22

Answer: A

Explanation:
A young brain has more plasticity because it has more neurons.

Question 23

Answer: C

Explanation:
Ainsworth described three categories of attachment: Insecure avoidant attachment, secure attachment and insecure resistant attachment.

Question 24

Answer: D

Explanation:
The dependent variable in Harlow's research was whether an attachment was formed.

Question 25

Answer: A

Explanation:
Piaget proposed that during cognitive development, the brain builds schemata.

Question 26

Answer: A

Explanation:
According to Piaget, children continuously take in, process, organize and use new information in ways that enable them to adjust to their environment. Piaget referred to this process as accommodation.

Question 27

Answer: B

Explanation:
Two key accomplishments of the pre operational stage are transformation and animism.

Question 28

Answer: B

Explanation:
Egocentrism is common among children in the pre operational stage of cognitive development.

Question 29

Answer: D

Explanation:
Genetics, environmental influences and learning all affect the ability to play tennis successfully.

Question 30

Answer: A

Explanation:
Erikson's theory of development is based on psychosocial development.

Question 31

Answer: C

Explanation:
Autonomy versus shame is the second stage.

Question 32

Answer: B

Explanation:
According to Erikson, the attitude of initiative versus guilt is formed during the third stage of his psychosocial development theory.

Question 33

Answer: B

Explanation:
A 30 year old eating all food with their hands would be considered abnormal behaviour.

Question 34

Answer: D

Explanation:
According to the Mental Health Continuum Model, an example of a 'reacting' behaviour where a person experiences 'common and reversible distress' is Procrastination.

Question 35

Answer: B

Explanation:
A person must exhibit 5 or more symptoms of gambling to be diagnosed as a pathological gambler.

Question 36

Answer: B

Explanation:
Symptoms of anxiety can be divided into four different components. These are: emotional, cognitive, behavioural and physiological.

Question 37

Answer: A

Explanation:
Schizophrenia is described as severe disturbances in thinking, emotions and behaviour.

Question 38

Answer: D

Explanation:
Avoidant, antisocial and narcissistic are all examples of personality disorders.

Question 39

Answer: A

Explanation:
Personality is an example of an internal factor.

Question 40

Answer: B

Explanation:
Employment is an example of an external factor.

Question 41

Answer: B

Explanation:
Psychosis refers to a loss of contact with reality.

Question 42

Answer: A

Explanation:
Neurosis refers to difficulties with thoughts, feelings and behaviours.

Question 43

Answer: D

Explanation:
A contributing biological factor that plays a role in addictive disorders is the dopamine reward system.

Question 44

Answer: B

Explanation:
A cognitive component of an anxiety disorder is worrying about the situation.

Question 45

Answer: A

Explanation:
A phobia is best described as an irrational fear of a specific object or situation.

SECTION B - Short answer questions

Question 1 (2 marks)

a. Brain versus heart debate was an argument about which organ was the centre of intelligent thought, personality, decision-making and consciousness. Some people believed that these traits were controlled by the brain, while others believe that it was the heart that was attributed with these qualities and functions.

1 mark

b. The mind–body problem was famously addressed by René Descartes in the 17th century. It is the problem of explaining how our mental processes (mind) are related to the physical processes in our bodies. Descartes suggested that the mind is a type of non-physical/spiritual aspect of being (perhaps a soul) and the body is the physical structure (fleshy matter). He believed that both body and mind could influence each other.

1 mark

Question 2 (4 marks)

DSB
This is where the skull of an individual undergoing brain surgery is opened and the brain is exposed. A small microelectrode is placed on the brain and a small electric current is delivered. This activates that area of the brain and the corresponding action can be noted. The patient is awake during this procedure as there are no nerve endings in the brain. They are able to tell the surgeon any sensations they perceive. This procedure has allowed the cortex to be mapped.

MRI
This is an imaging technique that shows the structure of the brain. Large magnetic fields are created that vibrate the atoms in the brain which act differently depending on the type of tissue they are constructed from. The computer creates a detailed 2D image, which can be converted into a 3D image.

Question 3 (2 marks)

a. Left hemisphere 1 mark

b. Frontal lobe 1 mark

Question 4 (2 marks)

Structure	Function
Cerebellum	Receives information from the sensory systems and other parts of the brain. Coordinates voluntary movements.
Medulla	Helps to regulate breathing, heart and blood vessel functions. Responsible for respiration and circulation.

Question 5 (5 marks)

Dendrites which are located at the end of the neuron receive information from other neurons.
Axon axon is a nerve fibre that carries the information along the neuron.
Myelin fatty substance that surrounds and protects the axon**.**
Axon terminals release neurotransmitters.
Glial cells surround the neurons and provide support and insulation between them.

Question 6 (3 marks)

An infant's brain has more plasticity because it is packed with a greater number of neurons. During puberty the number of neurons and the complexity of their connections increase in the cerebellum.
The prefrontal cortex is the last brain area to reach maturity. The prefrontal cortex has a significant role in the more advanced 'higher level' mental functions such as our ability to reason, plan ahead, organise, solve problems, make decision, etc. During adolescence, the limbic system (the emotional centre of the brain) is quite active, but the part of the brain responsible for reasoning, decision making, exercising judgement and emotional regulation is still maturing which is why we often see hyper-emotional states and bad decision making in adolescence.

Question 7 (2 marks)

- **a.** In response to stress will activate the flight/fight/freeze response (1 mark)
- **b.** Controls homeostasis (1 mark)

Question 8 (3 marks)

Animals have been used successfully to study and develop treatment for diseases such as Parkinson's disease. For Parkinson's disease, mice are either genetically modified or are given a toxin that mimics the damage to the substantia nigra and basal ganglia in the brain. After several weeks, the mice show the same symptoms as a person with Parkinson's disease and researchers are able to use miniature neuroimaging devices to monitor the progress of the disease. (1 mark)

Other animals such as monkeys and rats are also used as animal models because their brains can show a greater reduction in dopamine- producing cells. (1 mark)

PET scans have been particularly useful in studying the changes in dopamine levels which ultimately reflect the loss of dopamine-producing neurons. (1 mark)

Question 9 (4 marks)

1 mark for correct identification and explanation of Harlow's theory of attachment.

2 marks for correct procedure

1 mark for results.

- Harlow conducted a number of experiments to investigate the factors influencing the development of attachment by infant monkeys to their mothers.
- In one of his best-known experiments, Harlow (1958) studied the role of breastfeeding in infant–mother attachment.
- He used eight infant rhesus monkeys which had been separated from their mothers at birth.
- The monkeys were individually reared in cages, each of which contained two surrogate mothers.
- A *surrogate* is anyone or anything which 'substitutes for' or 'plays the part of' something else.
- The surrogate mothers were made of wire mesh and were roughly the same size and shape as real monkey mothers.
- One of the surrogates was covered in terry-towelling cloth and the other was left uncovered. A feeding bottle was attached to one of the surrogates in the same area where a breast would be on a real mother.
- Half of the animals were in cages with the feeding bottle on the cloth surrogate and the other half were in cages with the feeding bottle on the wire surrogate.
- Harlow proposed that if an infant's attachment to its mother was based primarily on feeding, the infant monkeys should have preferred and become attached to whichever surrogate mother had the bottle.
- Harlow found that regardless of which surrogate provided the nourishment, the infant monkeys spent more time with the cloth surrogate than the wire surrogate.

- Although the infants in the two groups drank the same amount of milk and gained weight at the same rate, all eight monkeys spent far more time climbing and clinging to the cloth surrogate than they did the wire surrogate.
- By the age of about three weeks, all of the monkeys were spending around 15 hours a day in contact with the cloth surrogate.
- No animal spent more than an hour or two in any 24 hour period on the wire surrogate

Question 10 (4 marks)

1 mark each for description of both stages.

1 mark each for a key accomplishment of each stage.

The information below encompasses all possible responses.

Sensorimotor stage

The sensorimotor stage encompasses the time from birth to about two years of age. Infants begin to have control over some motor movements, and start to make sense of incoming sensory information. As they begin to move through this stage, infants begin to understand the relationship between the sensory information they are receiving and the ability to voluntarily move certain parts of their bodies. For instance, a baby might see a rattle (so the visual sensory information is conveyed to their brain, where it is processed and linked to past experiences of enjoyment and hence a desire to have the rattle again) and physically coordinate the muscles in their legs and hands to move toward the rattle (crawl). An infant may hear music playing and coordinate their legs and arms to move up and down (dance).

One of the key cognitive accomplishments in the sensorimotor stage is object permanence. This phrase refers to the understanding that an object remains permanent, that is, can still be present even though it may be obscured. When infants have not yet acquired object permanence, a toy can be taken from them and covered with a blanket, and the toy will cease to exist for them. They will not seek the toy out or try to remove the blanket. This is one reason infants enjoy peek-a-boo – the person is 'gone' for them and they are genuinely surprised to see them appear from behind the couch. An infant who has established object permanence will not be fooled when a toy is covered by a blanket – they understand that the object still exists but is merely temporarily obscured. In his experiment, infants were presented with a toy, which was then hidden from view by a cover placed over the top. In order to show that they had obtained object permanence, infants had to reach over and remove the cover. Given children's responses to this task, Piaget thus believed that the ability to understand that an object still remains despite being obscured occurred around seven to ten months of age.

Goal-directed behaviour is the second key cognitive accomplishment of this stage. This is the ability to coordinate a number of steps in order to achieve a particular goal. For instance, a child may want a particular toy they can see in their toy basket. In order to get the toy, they may need to move towards the basket, take off the lid and take out the toys covering the desired one before retrieving the toy they were after.

Pre-operational stage

The pre-operational stage spans the time a child is two to seven years old, and children develop a number of skills during this period. Of all the developments occurring in this period, language development is the most significant. The term 'operational' refers to logic. Piaget called this stage 'pre-operational' because he did not believe children of this age were capable of logical thought.

The key cognitive accomplishment of egocentrism refers to the fact that children in this age bracket tend to only be able to see things from their own viewpoint. They think that everyone sees from their own perspective and desires what they also want. Piaget tested this by creating a papier-mâché diorama of three mountains. Each mountain had a different item on the top. The child sat on one side of the mountains and a doll was positioned opposite. The child was asked what the doll saw and was shown a number of images of the mountains from different perspectives. Consistently, the pre-operational child identified the picture of what they could see, rather than the orientation that the doll was faced with.

Children in this stage also exhibit the key cognitive accomplishment of animism, where they believe that everything is 'animate' rather than inanimate. They attribute human characteristics to objects that have no consciousness, so they believe that their toys are living things that get hungry or tired, or that the cushion is naughty for tripping them over.

Transformation is the ability to understand that things can change from one state to another. A child in this stage might understand that the cake batter has changed from a thick liquidy substance to a fluffy cake, without being fully cognisant of the idea that cooking is the application of heat which can change elements between states.

Centration describes the inability of a pre-operational child to focus on more than aspect of a stimulus at a time. A child may be faced with ten cars placed bumper to bumper in two lines of five. Even though the child watches one of the lines of cars as they are moved apart from one another, the fact that this line is now more stretched out may prompt the child to say that this line has more cars in it. The child is focusing on the overall length of the line without any regard to the actual quantity of cars in the line.

Pre-operational children also lack the skill of reversibility, that is, the ability to reverse or undo a process or line of reasoning. A child may be asked if she has a brother and respond that she does. When she is asked if her brother has a sister, a child in the pre-operational stage will typically say her brother does not have a sister.

Question 11 (4 marks)

Theory	Description	Advantage or Disadvantage
Piaget's four stage theory.	Piaget derived a four-stage process which he theorised all children moved through (though he acknowledged that not all individuals would necessarily attain the last stage). The stages correlated with chronological ages, though children might develop the skills of the next stage earlier or later than their precise chronological age. The four stages Piaget derived are the sensorimotor stage, the pre-operational stage, the concrete operational stage and the formal operational stage. For each stage, Piaget identified key cognitive accomplishments associated with each stage.	Underestimated the developmental ability of children The stage theory does not accommodate variability Timing of stages may vary according to what Piaget prescribed Some research conducted have not being able to be replicated Small samples were used Observations were biased as they were based on his own children Methodologies were culturally biased.
Erikson's eight stages of development	He proposed that personality is determined by how a person copes with crisis and that the lifespan could be divided into eight stages, with each stage requiring the individual to attend to a psychological crisis. Psychological crisis, according to this model, refers to a challenge the individual must deal with in order to develop personality characteristics, that then enables them to deal with future crisis. Each stage, as well as being associated with a particular crisis, is also associated with certain ages and fundamental questions that the individual must ask themselves.	Highlights how social situations assist in personality development and how childhood experiences have implications for adult personality. It has also been important in generating much research from its conception. Psychosocial conflicts do not necessarily lead to social-emotional development.

Question 12 (2 marks)

IV: the drug
DV: the effects on those who suffer from schizophrenia

Question 13 (1 mark)

Convenience sampling

Question 14 (4 marks)

Any two of:

1. Confidentiality – the researcher must not disclose information that may identify the participants.

2. Voluntary participation – participants must take part under their own free will with no duress applied.

3. Informed consent – participants must be fully informed of the nature and purpose of the research, particularly in respect of the procedures that are involved.

4. Withdrawal rights – participants must be informed of their right to leave the research at any stage.

5. Where deception has been necessary to safeguard the integrity of the research the participants must be fully debriefed at the conclusion.

6. Debriefing – the researcher must provide the participants with a full explanation of the research, its purpose and any conclusions that are reached, at the end of the research.

Question 15 (3 marks)

The 'two-hit' hypothesis explanation for the development of schizophrenia suggests that genetic or environmental factors disrupt early central nervous system (CNS) development. These early disruptions produce long-term vulnerability to a "second hit" that then leads to the onset of schizophrenia symptoms.

The first hit could be from faulty genetics, bad brain cells, lack of oxygen during birth or even drugs or infections the mother might have in her body. The second hit happens later in life due to the brain changing as it grows, or due to a major life stressor such as a young adult going to college or taking on a job after high school.