BUNBURY CATHOLIC COLLEGE
PSYCHOLOGY

Name: ANSWERS

Year 11

2018

Task One

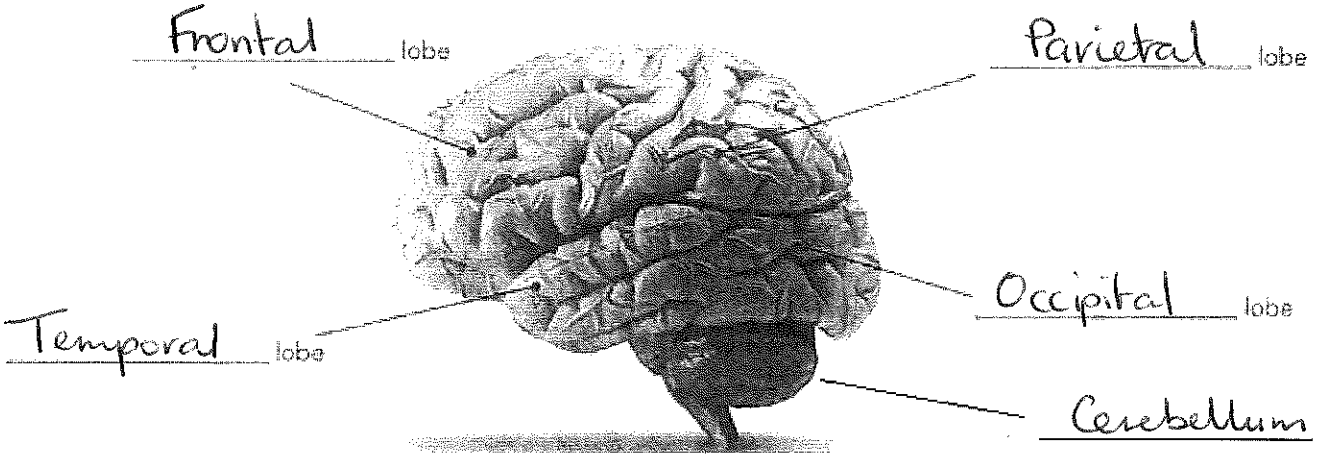
Topic Test

Biological Influences and Bases of Behaviour

Time: 50 minutes **Score: /59**

Question 1 **[5 marks]**

Label the following diagram of a brain.



* Correct Spelling.

Question 2 **[4 marks]**

A person has a brain injury and starts to lose fine motor coordination of his muscles and walks as if he is drunk. He also finds it difficult to speak. Name the two parts of the brain that have been affected by the injury and explain your choices.

Cerebellum (1) – function is to maintain posture, and to co-ordinate fine motor co-ordination. (1)

Frontal lobe / Broca's area (1) is responsible for control of muscles / movement for speech (1)

Question 3 **[6 marks]**

The forebrain is made up of three (3) main components.

(a) Name the three components:

cerebrum / cerebral cortex (1)

thalamus (1)

hypothalamus (1)

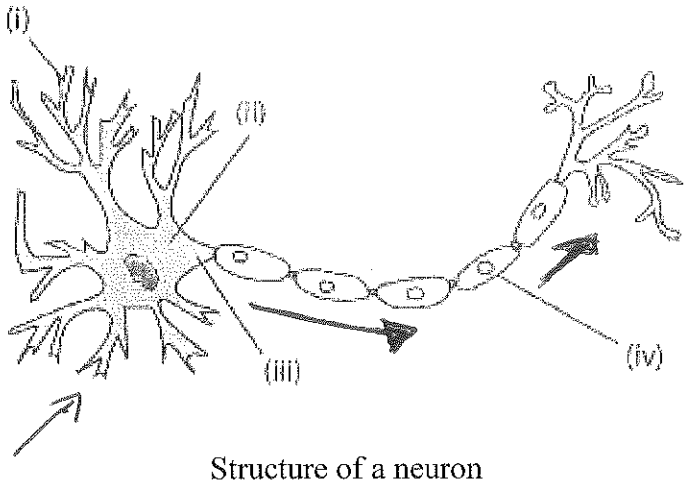
(b) State three (3) functions of the forebrain.

Any 3 for (1) each

Relay system for sensory input (1) OR regulation of arousal / attention (1) OR regulation of hormones (1) OR regulation of body temp (1) regulates biological clock (1) OR regulates hunger / thirst (1) OR thinking / reasoning (1) OR memory (1) OR initiating motor movement (1)

Question 4 **[8 marks]**

(a) Identify the structure of a neuron shown by the labels in the illustration below. (3 marks)



Structure of a neuron

(i) Dendrite (1)

(ii) Soma / cell body (1)

(iv) Myelin sheath (1)

(b) Describe the purpose of the structure labelled at (iv) in part (a). (1 mark)

insulation / protection / increase impulse speed.

(c) Label (iii) is the axon. Describe the function of the axon. (2 marks)

Axon takes impulses away from cell body (1) towards next neuron / muscle. (1)

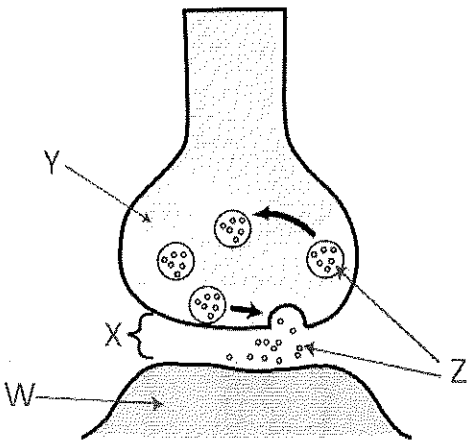
(d) Draw an ARROW to show the direction of the impulse along this neuron. (1 mark)

(e) What type of neuron does this diagram depict? (1 mark)

motor / efferent

Question 5 **[7 marks]**

Label the following diagram. (3 marks)



X synapse | synaptic gap

Y axon terminal | synaptic knob

Z neurotransmitter

b. Name ONE neurotransmitter that could be released from a vesicle in the brain. (1 mark)

serotonin | dopamine | GABA | acetylcholine | noradrenaline

c. Briefly explain how the neurotransmitter allows communication of an impulse to be transferred from one neuron to another. (3 marks)

Neurotransmitter is released from vesicles (1)

Diffuses across the synapse (1)

Binds to receptors on next neuron membrane | postsynaptic membrane. (1)

Question 6 **[6 marks]**

Drugs can have many effects on the nervous system and therefore on the psychological and physiological functions of the body.

Describe ONE psychological effect and ONE physiological effect on the body of the following drug types, AND give ONE example of each.

a) Stimulant:

Psychol: increases wakefulness/awake/↑mood/↑aggressive behaviour/↑confidence (1)

Physiol: ↑HR/↑temp/↑BP/↑breathing rate/tremors (1)

Example: caffeine/amphetamine/nicotine (1)

b) Depressant:

Psych: slows reactions/relaxation/confusion/↓alertness (1)

Physiol: ↓breathing rate/↓HR/nausea/dizziness (1)

Example: alcohol/cannabis (1)

Question 7 **[8 marks]**

Researchers use various types of technology that assist them to understand the brain.

a) Describe the function and purpose of using an EEG (electrencephalography) to investigate brain activity. (3 marks)

EEG - detects, amplifies + records brain waves/electrical activity in the brain (1)

- Records differences in frequency/amplitude/intensity (1)
- Indicates problems such as epilepsy or tumours (1)

b) What does MRI mean? Magnetic resonance imaging (1) (1 mark)

c) Describe the difference between MRI scans and PET scans. (4 marks)

MRI - uses strong magnetic field + radiofrequency pulses (1)

- produces static image (1)

PET - scans based on glucose consumption of the brain (1)

- indicates low/high activity during activities such as reading (1)

OR does not produce image of health of brain (1)

Question 8 **[3 marks]**

Many studies show that exercise has many physical and psychological benefits.

Explain THREE possible reasons for these positive effects. Any 3 for (1) each.

- strengthens heart → ↓ BP associated with stress
- experience helps to promote ability to cope with depression
- release of endorphins/noradrenaline/serotonin = mood boosting
- better body image = better mood/↓ depression.

Question 9 **[12 marks]**

Split brain studies have been used to explain how the left and right hemispheres function.

(a) Name the researcher who is associated with the original key research using split brain patients. (1 mark)

(Roger) Sperry (1)

(b) List FOUR (4) functions of the left hemisphere of the brain. (4 marks) Any 4 for (1) each.

- Receives + processes sensations from RHS of body
- Control vol. movement on RHS of body
- Language based tasks (speaking, writing)
- Analytical thinking
- logical reasoning
- Sequential processing.

(c) Name the collection of white myelinated nerve fibres that joins the two hemispheres of the cerebrum, and state the function of this structure. (2 marks)

Corpus callosum (1)

Allows communication/messages sent between the Left + Right hemispheres. (1)

(d) What did the researcher conclude about visual information processing in split brain patients, and explain how he reached this conclusion? (5 marks)

Visual information cannot be sent from the right to the left hemisphere + vice versa (1)
Split brain patient asked to look at a dot/ point in the middle of a screen (1)
Projector flashed picture of object to right visual field → info. to left hemisphere (1)
Patient could identify + say the name of object (1)
But if left visual field → Right hemisphere cannot say what object is (1)

(They need to explain it in reasonable depth. they can use a diagram)

END OF TEST

Check your answers