Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAKRING KEY**

Year 12 ATAR Psychology

Assessment Task 1 – Test 1

51 marks (5% Response)

**OUTCOMES:**

|  |  |
| --- | --- |
| *Outcome 1:* | *Psychological understandings* |
| *Outcome 3:* | *Applying and relating psychological understandings* |
| *Outcome 4:* | *Communication in psychology* |

**ALLOCATED TIME FOR THE TASK:**

* *You will have one period to complete the test in class*.

**INSTRUCTIONS:**

* *Attempt all questions*
* *No notes, files etc. to be accessed during the test*

|  |  |
| --- | --- |
| **Section One – Research Methods** | |
| **Total** | **/ 22** |

|  |  |
| --- | --- |
| **Section Two – Short Answer** | |
| Question 1 – The nervous system | / 24 |
| Question 2 – Brain parts and language | / 9 |
| Question 3 – Drugs and Neurotransmitters | /10 |
| **Total** | **/ 43** |

|  |  |
| --- | --- |
| **Total Marks** | |
| Section 1 – Research Methods | / 20 |
| Section 2 – Short Answer Section | / 43 |
| **Assessment Task 1 – Total Marks** | **/ 62** |

Teacher comment: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Research Methods Section**

**Question One (8 marks)**

At a University, 40 first year Psychology students participated in a study examining the effects of trauma on working memory. Students all took part in a working memory test.

a) Operationalise the independent variable (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| The type of trauma is defined (physical, emotional etc) and made measurable |  |
| e.g  Brain injury  Chronic childhood trauma  Death of a care giver | 1 |

b) Write an operationalised hypothesis for this study (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Population, Operationalised IV / DV, Direction/Prediction, Compare to a control | 1 |
| It is hypothesised that students aged 22-25 who have experienced a severe car crash in the last 18 months will have a reduced working memory capacity than students who have not experiences trauma as tested thrugh a working memory test. | 1 |

c) Quantitative data can be displayed through many different methods; however, some methods are better suited to certain data and situations than others.

For each of the following scenarios, identify which is the most appropriate quantitative display method and justify your choice.

|  |  |
| --- | --- |
| **Descriptor** | **Marks** |
| Longitudinal data showing yearly changes in intelligence.  Method: Graph (line graph)  Justification:  Shows trends, shows large data sets visually  Easily comparable  Data is continuous | 0-2 |
| A series of medians and modes for a data set  Method: Table  Justification:  Easily comparable  Easy to identify values or information  Shows multiple measures in the same table. | 0-2 |
| The proportions of attitudes of 100 surveyed people  Method: Diagram (pie chart of bar graph)  Justification:  One set of data is ordinal one is discreet  Easy to analyse large sets of data  Simple to present | 0-2 |

**Question Two (12 marks)**

Dr Almasi has been working with a young repeated offender named Yasmin, Yasmin has been undergoing various talking therapies and therapeutic techniques with Dr Almasi to try to rehabilitate her behaviour. Recently, they have been trialling the use of ADHD medication which has helped reduce Yasmin’s angry outbursts as measured by interviews, observations and self-report data.

**Dr Almasi concluded that ADHD medication is an effective treatment for anger issues in teenagers.**

a) Is this conclusion considered scientific or non-scientific and why (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| No – the research does not follow a method | 1 |

b) State the data collection method used for this type of research (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Case study | 1 |

(c) Describe the two **main** sources of error in this piece of research and how Dr Ahmasi could overcome the error in the future. (2 mark)

|  |  |
| --- | --- |
| **Source of Error** | **Way to overcome it** |
| The conclusion drawn was a cause and effect relationship which is impossible from a case study / non-experimental piece of research | Set up an experiment with a control condition and experimental condition |
| Too many confounding variables to look at a clear relationship between the two variables being investigated (talking therapies, therapeutic techniques) | Try to isolate the variables by using each therapy or ADHD medication at a separate time and track their relationships with the angry behaviours |

d) State whether Dr Ahmasi’s research was ecologically valid and generalisable to a larger population and explain your reasoning. (4 marks)

i. Ecological validity:

|  |  |
| --- | --- |
| **Description** | **Marks** |
| The ecological validity is high as the behaviours measured are the real-life reflection of Yasmins everyday life | 1 |

i. Generalisable to the larger population:

|  |  |
| --- | --- |
| **Description** | **Marks** |
| The results have low generalisability to a larger population as the population is too small (under 100). | 1 |

**Section Two**

**Question Three (24 marks)**

a) The human nervous system is a complex structure comprised of numerous structures and organs.

NERVOUS

SYSTEM

A)

D)

F)Autonomic

E)

C)

B)

H)

G)

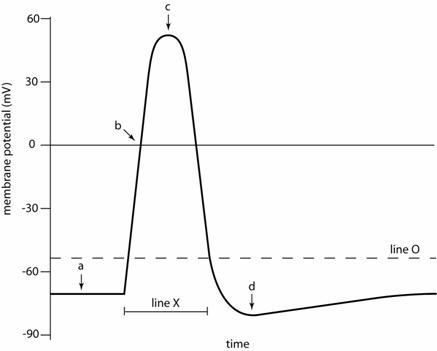
Identify and describe the role of the nervous systems identified below: (*4 marks*)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| D – Peripheral nervous system  Responsible for taking sensory information to the CNS and sending information from the CNS to the effector organs, glands or muscles. | **1-2** |
| G – Parasympathetic nervous system  responsible for the body's rest and **digestion** response when the **body** is relaxed, resting, or feeding.  OR  Sympathetic nervous system  directs the body's rapid involuntary response to dangerous or stressful situations.  Note: do not accept “rest and digest” or “fight and flight” – must explain what these mean | 1-2 |

b) Andy is excited as he gets ready to bungee jump from a platform above a rugged cliff. Describe how the somatic nervous system is responding to the sensory information he is getting while in this excited state.

|  |  |
| --- | --- |
| **Description** | **Mark** |
| Sensory receptors would be receiving visual information letting Andy know how high up he is, sensory neurons would send this information to the brain. Motor neurons would be receiving information from the brain and contract his muscles in excitement | 1-2 |

c) Label the three parts of the graph below, using the labels provided. (2 marks)



|  |  |  |
| --- | --- | --- |
| Resting (polarised) | Hyperpolarised | Action Potential |

Part A: Resting Membrane potential

Part C: Action Potential

d) Explain how a neural message crosses the synapse. Include an explanation of the processes of excitation and inhibition at the synapse. (5 marks)

|  |  |
| --- | --- |
| Description | Marks |
| Action potential arrives at the axon terminal causing the vesicles which contain the neurotransmitter to move towards the cell membrane of the pre-synaptic neuron (1)  The vesicles release the neurotransmitters into the synapse where they diffuse across the synaptic gap (1)  Neurotransmitters bind to the specific receptor that it fits with on the post-synaptic neuron (1)  If the neurotransmitter is excitatory it depolarises the membrane and makes it more likely for an action potential to occur (1)  If the neurotransmitter is inhibitory it polarises the membrane even more and makes it harder for an action potential to occur (1) | 1-5 |
|  |  |

e) Tom is walking to his letterbox bare-footed. He does not notice the nail on the path and places his foot squarely on the sharp end. Explain Tom’s neural response fully in the space below, including why Tom *did not fall over* when he stood on the nail. Include all relevant terminology in your response. (6 *marks*)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Sensory receptors (1) in Tom’s foot receive the stimulus and cause an action potential to fire down sensory (afferent) neurons up Tom’s leg to his spinal cord (1). The sensory neuron synapses with interneurons (1) on which quickly relay the message to the motor neuron in the spinal cord, this sends a signal down the motor neuron (1) to the effector muscles to contract and move Tom’s foot away (1). Tom did not fall over as a separate signal is sent to Tom’s brain (cerebellum and primary motor cortex) to ensure he maintains his balance (1). |  |

f) Explain why neurons have refractory periods

|  |  |
| --- | --- |
| **Description** | **Mark** |
| Limits the number of action potentials that a given nerve cell can produce per unit time or ensures that the nerve impulse moves in one direction (dendrite to axon terminal) | 1 |

g) Explain at the ionic level what causes the refractory period.

|  |  |
| --- | --- |
| **Description** | **Mark** |
| There is a lag in the potassium channels closing after repolarisation (1), thus more potassium leaves the neuron and the inside of the neuron becomes more negative than resting membrane potential (1) | 1-2 |

h) Muscular Sclerosis is a degenerative disease that deteriorates the myelin of the neuron and causes motor skills to become shaky. Using your knowledge of neural transmission and the nervous system explain why nerve impulses are not being received correctly (3 marks)

|  |  |
| --- | --- |
| **Description** | **Mark** |
| Neurons are kept in bundles called nerve fibres, thus if the myelin is deteriorated which insulates and contains the charge to within the neuron (1) then the messages and charges can move across different neurons in the nerve fibre (1) and end up sending mixed messages to the effector muscles, causing shaky movements (1) | 0-3 |

**Question Four (9 marks)**

After a motorcycle accident Saskia was left with a traumatic brain injury. Doctors notes that she was able to understand what was being communicated to her but she was unable to articulate words and sentences properly.

i. Identify the structure of the brain that is damaged (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Brocas area | 1 |

ii. In the correct order identify and describe the functions of each of the structures of the brain that allow sound and language to be processed and communicated. (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identify (1) and Describe (1)  Primary auditory cortex: distinguishes verbal from non-verbal noise and tone / pitch  Wernicke’s area: responsible for the comprehension of speech – putting meaning to the language  Broca’s area: responsible for the planning and organising of articulation of speech  Primary motor cortex: responsible for directing the muscles of the mouth, tongue, lips to produce language | 1-8 |

**Question Five (10 marks)**

1. Name two neurotransmitters and state two function it helps regulate (4 marks)

|  |  |
| --- | --- |
| **Neurotransmitters** | **Two Effect of neurotransmitter** |
| Serotonin | Relaxation, mood stabiliser, feelings of well-being / contentment, |
| Dopamine | Motivation , Working Memory, pleasure |
| Noradrenaline | Determination, Alertness |

1. Sam is 29-year-old who is out partying with his friends, he accepts a drink from a stranger at the party and in around 30 minutes he starts to notice he doesn’t feel normal. His heart has started racing, his vision becomes shaky, the trees around him start to look like they have faces and the wind running through the leaves start to sound like they are speaking to him. He tries to explain to his friend what he is seeing and hearing to check if he is going crazy but as soon as his friend replies, it sounds like whale noises and Sam cannot understand him.

i. What class of psychoactive drug is Sam likely to be on? (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Hallucinogen |  |

ii. Justify your answer to part (b)(i) using evidence from the scenario (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| He is experiencing hallucinations such as “trees around him start to look like they have faces and the wind running through the leaves start to sound like they are speaking to him” |  |

iii.Explain how psychoactive drugs which act agonistically to impact neural transmission (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Antagonist:  Blocks the neurotransmitter form attaching to the receptor thus stopping the neurotransmitter causing an impact on the post-synaptic neurotransmitter | 0-2 |

(c) Neurotransmitters are not the only chemical message that impact our behaviour , thought and emotion. Identify onne hormone and explain how it impacts behaviour. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identify (1) Describe (1)  Adrenaline – prepares the body to respons to danger by increasing heart rate, breathing and supplying blood to the muscles for action  Testosterone - increases aggression, dominance and seeking of sexual activity. It also helps to spark competitiveness and boost self-esteem  Accept any other relevant answer | 0-2 |