**TRIALS FOR TEACHERS.**

**© Copyright rights reserved 2014**

**Permission is granted for copying for use within the purchasing school only.**

**2014**

**TRIAL EXAMINATION**

**VCE PSYCHOLOGY**

**UNITS 3 & 4**

**INSTRUCTIONS**

Reading Time - 15 minutes

Writing time - 150 minutes

**SECTION A**

Multiple Choice questions 65 questions 1 mark each 65 Marks

Answer the multiple choice questions on the answer sheet provided.

**SECTION B**

Short answer questions - 15 Short answer questions – 60 marks

**SECTION C**

Extended answer 4 questions 15 Marks

**TOTAL** 140 marks

Answer the short answer questions and the extended answer question in this booklet.

**IMPORTANT NOTES**

* THIS PRACTICE EXAMINATION WAS CONSTRUCTED AND REVIEWED BY EXPERIENCED TEACHERS OF VCE PSYCHOLOGY. IT HAS NO OFFICIAL STATUS.
* NO TEACHER WHO HAS CONTRIBUTED TO THIS PAPER BY SETTING OR REVIEWING QUESTIONS HAS HAD ANY CONNECTION WITH THE VCAA PANEL INVOLVED IN SETTING THE VCAA EXAMINATION FOR UNIT 3 & 4 PSYCHOLOGY NOVEMBER 2014.
* QUESTIONS IN THIS PAPER ARE ORIGINAL EXAMPLES, BASED ON THE TYPE OF QUESTIONS THAT HAVE APPEARED IN PREVIOUS VCE EXAMINATIONS
* PURCHASE OF THIS EXAMINATION THROUGH EMAIL ALLOWS USE BY STUDENTS AND TEACHERS OF THE PURCHASING SCHOOL ONLY. PAPERS MAY BE PRINTED IN HARD-COPY, POSTED ON THE SCHOOL’S **INTERNAL** ELECTRONIC SITES AND TRANSMITTED ELECTRONICALLY **WITHIN** THE SCHOOL.

**Section A – Multiple choice questions**

Question 1

Sarah is in the VCE Psychology examination writing as fast as she can and concentrating very hard on what she is doing; she is not aware of anything that is going on around her and does not hear the boy behind her have a coughing fit, nor notice when the supervisor walks past her desk. Sarah is most probably

1. in Normal Waking Consciousness (NWC)
2. in an Altered State of Consciousness (heightened awareness – selective attention)
3. in an Altered State of Consciousness (reduced awareness – divided attention)
4. in an Altered State of Consciousness (daydreaming)

Question 2

P-plate drivers in Victoria are not permitted to hold a mobile phone conversation (even hands-free) or send text messages when driving. This law exists because

1. drivers are in an Altered State of Consciousness (ASC) – heightened awareness
2. they cannot perform two controlled processes (driving and holding a conversation on the phone) at the same time
3. drivers cannot perform an automatic process (driving) at the same time as a controlled process (holding a conversation on the phone)
4. drivers cannot perform an automatic process (holding a conversation on the phone) at the same time as a controlled process (driving)

Question 3

Which of the following statements is **not** true of automatic and controlled processes and level of attention

1. it is possible to perform two automatic processes at the same time because they permit divided attention
2. automatic processes require selective attention whilst controlled processes enable divided attention
3. controlled processes require selective attention whilst automatic processes enable divided attention
4. it is not possible to effectively perform two controlled processes at the same time because each requires selective attention

Question 4

In a sleep laboratory, Emma is connected to an Electromyograph (EMG) and several other instruments. During REM sleep the Electromyograph would show

1. very little tension in the muscles that move the eyes
2. very little electrical activity in the muscles that move the eyes
3. very little tension in the muscles of the body
4. very little electrical activity in the muscles of the body

**Questions 5 & 6 refer to the following information**

Emma, a young adult student had been suffering poor sleep patterns and spent the night in a sleep laboratory. In the morning her therapist informs her that she suffered partial sleep deprivation because she experienced almost no REM sleep.

Question 5

The therapist would have obtained this information from readings on the EEG and

1. the sleep diary
2. the EMG readings
3. the heart-rate monitor
4. the EOG readings

Question 6

Approximately what percentage of her sleep would the therapist expect Emma to spend in REM sleep if she had normal sleep patterns?

1. 10%
2. 20%
3. 30%
4. 50%

Question 7

There are several theories of why we sleep. Which of the following provides evidence in support of the ‘Survival Theory’?

1. cattle require approximately 4 hours sleep but cats sleep at least 15 hours per day
2. cats require approximately 4 hours sleep but cattle sleep at least 15 hours per day
3. people who are not active have generally the same sleep patterns as active people
4. athletes will sleep approximately an extra 90 minutes the night they have run a marathon

**Questions 8 & 9 refer to the information below:**

Randy Gardner, a radio-station DJ in California – is in the Guinness Book of Records, recorded as having remained asleep for 264 hours during a ‘Wake-a-Thon’.

Question 8

During his 11 days of apparent wakefulness, Randy must have experienced many episodes of

1. dreaming
2. K-complexes
3. microsleeps
4. hallucinations

Question 9

In order to return to normal functioning, Randy will probably require

1. one or two good nights’ sleep of eight hours or more
2. several nights of extended sleep to make up the hours of sleep lost
3. doses of melatonin to assist with sleeping patterns
4. many caffeine drinks

Question 10

During adolescence, compared with during the years of childhood, and compared with adults, the typical person will

1. need more sleep than a 10-year old child but less than an adult
2. need more sleep than an adult but less than a 10-year old child
3. need more sleep than either an adult or a 10-year old child
4. need less sleep that either an adult or a 10-year old child

Question 11

The somatic nervous system comprises

1. the sensory nervous system and the motor nervous system
2. the limbic system and the cerebral cortex
3. the sympathetic nervous system and the parasympathetic nervous system
4. the peripheral nervous system and the central nervous system

Question 12

Which of the following is an accurate statement

1. the hippocampus is mainly responsible for forming implicit memories
2. the hippocampus is mainly responsible for forming explicit memories
3. the hippocampus is mainly responsible for forming procedural memories
4. the hippocampus is mainly responsible for learning through classical conditioning

Question 13

Wernicke’s area is almost always located in the

1. association cortex of the left temporal lobe
2. primary cortex of the left temporal lobe
3. association cortex of the left frontal lobe
4. primary cortex of the left frontal lobe

Question 14

Wernicke’s aphasia

1. does not prevent a person from understanding what is said to them
2. causes a person to omit short words from sentences
3. is sometimes referred to as receptive aphasia
4. is sometimes referred to as expressive aphasia

Question 15

Broca’s aphasia

1. may result from damage to the left temporal lobe
2. may result from damage to the left parietal lobe
3. may result from damage to the left frontal lobe
4. may result from damage to the left occipital lobe

Question 16

Visual images received in the right occipital lobe

1. have been detected by photoreceptors on the right side of each retina
2. have been detected by photoreceptors on the left side of each retina
3. have been detected by photoreceptors in the right eye only
4. have been detected by photoreceptors in the left eye only

**Questions 17 and 18 refer to the following information**

In ‘split-brain’ research, Sperry and Gazzaniga studied patients who had had operations to sever the corpus callosum, in order to prevent severe epileptic seizures.

Question 17

A ‘split-brain’ patient has the word “HAMMER” flashed to her right visual field. She could then perform which of the following?

1. Say “Hammer”
2. Pick a hammer out of a variety of objects under a screen – using her left hand
3. Pick a hammer out of a variety of objects under a screen – using her right hand
4. She would not identify a hammer at all

Question 18

A picture of a hammer was flashed to her left visual field. She could then perform which of the following?

1. Say “Hammer”
2. Pick a hammer out of a variety of objects under a screen – using her left hand
3. Pick a hammer out of a variety of objects under a screen – using her right hand
4. She would not identify a hammer at all

Question 19

People suffering ‘left neglect’ have experienced lesions (damage) to

1. their left parietal lobe
2. their right parietal lobe
3. their left frontal lobe
4. their right frontal lobe

Question 20

The parts of the brain most involved with forming *procedural memories* are the

1. hippocampus and cerebral cortex
2. amygdala and cerebral cortex
3. hippocampus and cerebellum
4. amygdala and cerebellum

Question 21

A person experiencing anterograde amnesia can be said to be experiencing

1. pro-active interference
2. retrieval failure
3. consolidation failure
4. cue-dependent forgetting

Question 22

Alzheimer’s disease can only be definitely identified by a brain autopsy after the death of a person. On performing the autopsy the pathologist will find

1. blockages in the arteries taking blood to the brain
2. evidence of bleeding into the brain
3. many dead brain cells and dead cells in the corpus callosum
4. fewer brain cells than in a healthy person and blocked synapses

Question 23

Memory decline in old age is shown up more by measures using

1. re-learning rather than recognition
2. recognition rather than recall
3. recall rather than recognition
4. re-learning rather than recall

Question 24

The capacity of (unrehearsed) short-term memory for the average adult is considered to be

A. 7 ± 2 items (5 to 9 items)

B. 12 to 20 items

C. 20 items

D. extremely large for iconic images

**Questions 25 and 26 refer to the information below:**

During a Psychology class, a list of 25 words is read to students at the beginning of the lesson. When asked to recall as many of the words as possible, the following shape of graph was plotted from the results (Graph A):

Near the end of the lesson, the class was again asked to recall the words from the list. This time the results were as shown on the graph below (Graph B):

Question 25

For the curve to have the shape shown in Graph A, we can tell that the students were asked to

1. process the words by their meaning
2. recall the words immediately after learning them
3. recall the words in any order
4. recall the words in any order, immediately after learning them

Question 26

In Graph B, Words from the beginning of the list are recalled better than those in the middle of the list. This is because words at the beginning of the list

1. are still in short-term memory
2. are showing the recency effect
3. are part of the asymptote
4. have been rehearsed into long-term memory

Question 27

According to Craik and Lockhart’s “Levels of Processing” theory, *semantic encoding* provides the most efficient means of remembering a list of words. Semantic encoding involves encoding by

1. putting the word in a sentence where the meaning of the word is important for the meaning of the sentence
2. finding a word that rhymes with the word to be encoded and storing them as a pair
3. visualising features of the word to be encoded, such as the length of the word, whether it starts with a vowel or consonant etc.
4. visualising an object associated with the word and remembering the object with the word

Question 28

According to the information processing model of memory (Atkinson & Shiffrin), transfer of information from short-term memory to long-term memory requires the process of

1. attention
2. activation
3. maintenance rehearsal
4. elaborative rehearsal

Question 29

Items are considered to be lost from short-term memory through

1. interference and displacement
2. displacement and decay
3. decay and amnesia
4. amnesia and displacement

Question 30

According to Baddeley and Hitch, two storage components of working memory are the

1. visual storage component and auditory storage component
2. phonological loop and visuo-spatial sketchpad
3. episodic buffer and audio-visual storage component
4. iconic memory and echoic memory

Question 31

*Motivated forgetting* includes

1. repression, where a person deliberately does not access the memory
2. suppression, where the mind unconsciously refuses to access a memory as a protection mechanism
3. suppression, where a person deliberately does not access the memory
4. repression, where the mind consciously refuses to access a memory as a protection mechanism

Question 32

Carla studied for her VCE Biology exam for two hours this morning, followed by studying for her VCE Psychology exam for two hours. After lunch she attempts the multiple choice sections from the 2013 exams in both subjects.

When marking them with answers from the VCAA website, she is surprised to find that she remembers much more detail of the Psychology than the Biology.

It is possible that Carla is experiencing

1. retroactive interference where Biology is inhibiting her retrieval of Psychology
2. proactive interference where Psychology is inhibiting her retrieval of Biology
3. retroactive interference where Psychology is inhibiting her retrieval of Biology
4. proactive interference where Biology is inhibiting her retrieval of Psychology

Question 33

There was an armed robbery at a local convenience store.

One newspaper reporter asked “How thin was the robber?”

The witnesses are most likely to give estimates of

1. overweight
2. underweight
3. of average build
4. all of the above are equally likely

Question 34

Which of the following is an acrostic?

1. AFL
2. QANTAS
3. Every Good Boy Deserves Fruit
4. www.

Question 35

A *reflex action* is a form of non-learned behaviour, this means that it is

1. genetically programmed
2. an adaptive behaviour
3. a response determined by evolutionary pressures
4. all of the above

Question 36

A *reflex* differs from a *fixed action pattern* in that a fixed action pattern is

1. a complex response
2. learned soon after birth
3. not species specific
4. not able to be changed

Question 37

When learning occurs, the mass of protein in the brain increases. This is because of

1. synaptogenesis
2. increased number of neurons
3. synaptic pruning
4. brain plasticity

Question 38

It is very important that, in the first few days and weeks of life, children are exposed, visually, to light and dark and movement, if they are not, it is likely that their primary visual cortex will remain under-developed. This period of early sensory experience is referred to as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ period and is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ learning.

1. critical; experience dependent
2. sensitive; experience expectant
3. sensitive; experience dependent
4. critical; experience expectant

Question 39

In terms of *developmental plasticity* which of the following processes continues after others are complete?

1. proliferation
2. circuit pruning
3. migration
4. myelination

Question 40

The process of circuit pruning occurs

1. throughout life
2. in infancy
3. in early childhood and in teenage years
4. in adolescence and in adulthood

Question 41

In classical conditioning, the most efficient learning occurs when

1. the neutral stimulus occurs one second or less before the unconditioned stimulus
2. the reflexive response occurs one second or less before the neutral stimulus
3. the unconditioned stimulus occurs one second or less before the neutral stimulus
4. the reflexive response occurs as a result of an unconditioned stimulus

Question 42

In operant conditioning, stimulus discrimination occurs when

1. a voluntary response occurs in the presence of a stimulus similar to the antecedent condition (discriminative stimulus)
2. a voluntary response occurs in the presence of the antecedent condition (discriminative stimulus)
3. a reflexive response which has occurred in the presence of a stimulus similar to the antecedent condition (discriminative stimulus) is now only elicited by the discriminative stimulus
4. a voluntary response which has occurred in the presence of a stimulus similar to the antecedent condition (discriminative stimulus) is now only elicited by the discriminative stimulus

Question 43

In classical conditioning, stimulus generalisation occurs when

1. the conditioned response is elicited by the unconditioned stimulus
2. the unconditioned response is elicited by the conditioned stimulus
3. the conditioned stimulus causes the unconditioned, reflexive, response
4. a stimulus similar to the conditioned stimulus causes the conditioned response

Question 44

Which of the following istrue about punishment?

1. punishment may occur before or after the behaviour it aims to eliminate
2. punishment is an alternative term for negative reinforcement
3. punishment increases the strength or frequency of a desired response
4. punishment decreases the strength or frequency of an unwanted response

Question 45

Observational learning and operant conditioning have certain similarities including

1. in both forms of learning, the learner is passive
2. in both forms of learning, the response is reflexive
3. in both forms of learning, the behaviour precedes the response
4. in both forms of learning, the behaviour is voluntary

Question 46

According to Bandura, the correct sequence of stages in observational learning is:

1. Attention; Retention; Reproduction; Motivation; Reinforcement
2. Attention; Retention; Motivation; Reproduction; Reinforcement
3. Attention; Retention; Motivation; Reinforcement; Reproduction
4. Attention; Motivation; Retention; Reproduction; Reinforcement

Question 47

Jose sprained his knee playing football. His physiotherapist treats his knee with massage and the pain is lessened for a few hours. Jose attends the physiotherapist every day.

The reason Jose keeps returning to the physiotherapist is best explained by

1. spontaneous recovery
2. extinction
3. negative reinforcement
4. positive reinforcement

Question 48

A researcher has a pigeon in a Skinner Box. The researcher aims to teach the pigeon to spin around clockwise every time a light flashes.

Which procedure would the researcher be most likely to use for this training?

1. Classical conditioning
2. Positive reinforcement
3. Response cost
4. Negative reinforcement

Question 49

John B. Watson’s experiments with “Little Albert” showed all of the following **except** that

1. the reflexive response of fear can be conditioned
2. a child can learn to be frightened of a previously neutral object
3. the fear response can be generalized
4. stimulus discrimination can occur in small children

Question 50

It is not known whether Little Albert’s mother had given permission for Prof. Watson to experiment with Little Albert. If she had given written permission, the experiment would be

1. ethically appropriate
2. unethical because Albert had not given consent
3. unethical because of possible lasting harm to Albert
4. unethical because Albert was a young baby

Question 51

A mental illness is

1. a mental health condition that causes dysfunction in a person’s life
2. a mental health condition caused by chemical imbalance in the brain
3. also referred to as a *psychosis*
4. a mental health condition that can be treated with psycho-active drugs or brain surgery

Question 52

The biopsychosocial model relates most closely to which conceptualisation(s) of normality?

1. statistical, functional and surgical
2. functional, statistical and medical
3. medical, functional and sociocultural
4. sociocultural, historical and functional

Question 53

Which row is correct in the following table of factors contributing to mental health?

|  |  |  |  |
| --- | --- | --- | --- |
|  | Biological | Psychological | Social |
| A | neurotransmitters | motivation | personality |
| B | personality | neurosis | homelessness |
| C | organ damage | educational level | family structure |
| D | genetics | cognition | support networks |

Question 54

The biopsychosocial model is best applied to which phase in the diagnosis and treatment of mental health issues?

1. Diagnosis and treatment
2. Treatment only
3. Treatment and subsequent maintenance of health
4. Diagnosis, treatment and maintenance of health

Question 55

What type of mental disorders are most appropriately identified by dimensional diagnoses?

1. substance abuse disorders
2. mood disturbances
3. personality disorders
4. phobias and anxiety disorders

Question 56

When stressed a person will show elevated levels of arousal. This arousal is created and maintained by the

1. sympathetic nervous system
2. automatic nervous system
3. somatic nervous system
4. sensory nervous system

Question 57

After arousal has occurred and the threat no longer exists, the body’s levels of physical functioning will return to normal. This return is brought about by the

1. homeostatic systems
2. allostatic systems
3. allostatic load systems
4. central nervous system

Question 58

Lazarus’ *transactional model* emphasizes

1. the way in which an individual appraises a potential threat
2. the way in which socio-cultural influences affect stress
3. the individual’s physical responses to a potential threat
4. the way in which an individual deals with a potential threat

Question 59

Homeostasis refers to

1. the state of metabolic balance in the body
2. physiological or behavioural change leading to allostasis
3. the number of stressors that a person is experiencing
4. a breakdown in mental or physical functioning brought about through stress

**Questions 60 and 61 refer to the following information:**

Shaun works at the Ford manufacturing plant in Geelong. He knows that he will not have a job when the factory closes in 2016.

At first he was devastated by this news as he has a mortgage and his wife is expecting their second baby in November.

After discussing the situation with his wife, he has decided to return to study at night and achieve a Diploma of Engineering, which he can finish by the end of 2016.

In terms of Lazarus and Folkman’s model

Question 60

Shaun’s feeling of concern when he heard the news was a result of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and he perceived the situation as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. primary appraisal; challenge
2. secondary appraisal; threat
3. primary appraisal; threat
4. secondary appraisal; challenge

Question 61

Shaun enrolling for further study was a result of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is a form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. primary appraisal; problem focused coping
2. primary appraisal; emotion focused coping
3. secondary appraisal; problem-focused coping
4. secondary appraisal; emotion-focused coping

Question 62

Which of the following would be likely to result in eustress

1. experiencing workplace bullying
2. getting a second interview for a much wanted job
3. failing your driving test
4. fighting with your partner

Question 63

Emotion-focused coping is one strategy involved in Lazarus and Folkman’s transactional model of stress and coping. Which of the following represents emotion-focused coping strategies

1. meditation
2. physical activity
3. cognitive-behavioural therapy
4. bio-feedback

Question 64

Biofeedback is one process used in coping with stress. Which of the following represents biofeedback?

1. You discuss your problems with a friend and you feel better.
2. Your blood-pressure is shown on a computer screen and you try to reduce the level
3. A psychologist hypnotizes you and suggests that your blood-pressure is reducing
4. You take one aspirin each day to reduce your blood pressure

Question 65

Which of the following best defines *distress*

1. stress that can be either positive or negative
2. stress that is experienced in a negative way, such as bad news
3. stress that is also known as *good* stress
4. stress that leads to crying

**Section B - Short answer section: answer in the spaces provided.**

**Question 1**

Julie thinks the medication she is taking puts her into an altered state of consciousness (ASC). Her friend, Jacquie, decides to investigate this and asks Julie some questions to see if she is in an ASC.

State two questions that Jacquie could ask and indicate how each would identify that Julie was in an ASC. 4 marks

­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 2**

**a.** What is measured by an EOG? 1 mark

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**b.** What would an EOG show during deep (stage 3 or 4 NREM) sleep? 1 mark

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**c.** Marcia is a healthy adult, age 25. She has taken part in a sleep study. On the axes below, draw a likely somnogram to show Marcia’s likely sleep pattern over her 8 hours of sleep during the night. 3 marks

Stage

**REM**

**1**

**2**

**3**

**4Question 3**

1. Explain why large proportions of the primary somatosensory cortex are devoted to fingers and hands/lips and tongue. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which part of the Primary Motor Cortex controls movement of the fingers of the right hand?2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 4**

Rob’s grandmother and grandfather on his mother’s side both suffered Alzheimer’s disease in old age. Rob’s mother is concerned that she may suffer the same problem as she gets older**.**

What strategies could Rob suggest his mother could use to delay the onset of Alzheimer’s or make it less likely that she will suffer from the disease at all? 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

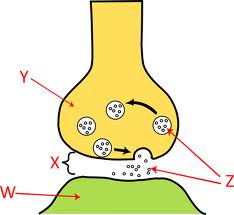
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 5**

Below is a simplified diagram of the connection between two neurons. Identify the parts indicated. 4 marks

****

W: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

X: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Y: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Z: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 6**

George has been conned by a telemarketer and is buying some cleaning products online using his credit card.

Using Baddeley and Hitch’s model of working memory, explain how the episodic buffer and the central executive are used by George and the telemarketer. 4 marks

Telemarketer

Central Executive: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Episodic Buffer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

George

Central Executive: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Episodic Buffer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Question 7**

An armed robbery was committed at a 7-11 Store in a busy street. Police dressed dummies in clothes similar to those worn by the robbers and put them in the street outside the 7-11.

From your understanding of memory, explain how and why these dummies may assist police in solving the crime. 4 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 8**

**a.** What is an alternative term for *species specific behaviour*? 1 mark

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**b.** Give an example of a species specific behaviour and show how this differs from a reflex action. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 9**

Roger’s dog, Lucy, is very interested in food. For a week, Lucy stays with Roger’s mother who uses an electric tin-opener to open her cans of dog food.

When Lucy returns to live with Roger, he is surprised to see that Lucy begins to salivate whenever he uses his electric blender; but after about a week, Lucy does not show any interest when he uses the blender.

Using the language of *classical conditioning* explain what has been happening to Lucy over the time described above. 5 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 10**

Roger decides that he will train Lucy to do tricks. After she has learned to sit and lie down on command, he wants her to spin round three times clockwise when he says “Spin Lucy!”

Using the language of operant conditioning, describe the process Roger could use to train Lucy to do this trick. 5 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 11**

Compare and contrast *Classical* and *Operant* conditioning in terms of: 3 marks

1. role of the learner

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. timing of stimulus and response

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**c.** nature of the response

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 12**

How does *stimulus generalisation* occur in operant conditioning? Explain with the use of an example. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 13**

**a.** Give two characteristics of an adult model that increase the likelihood that a child will imitate the model’s behaviour. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**b.** Joseph wants to use observational learning to teach his seven-year old son, Eli, how to kick a football.

Using the language of observational learning, describe the steps that Joseph should use to achieve this. 5 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 14**

**a.** Rose has been under a lot of stress since she lost her job a few months ago and she seems to pick up colds and infections more frequently than ever before. Explain why this may be the case. 4 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**b.** A friend suggests that Rose should learn meditation and spend 20 to 30 minutes per day practising meditation. How and why might this help Rose? 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe how *biofeedback* might be used to help Rose learn to manage her stress. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section C - Research Methods. Answer in the space provided.**

*All questions refer to the research described below*

Georgia is a teacher at Hillcrest Secondary College. She is studying for a master’s degree in Psychology and is completing research for her thesis.

She believes that Year 10 students who revise by using semantic encoding – re-writing their notes in their own words – will achieve better understanding of their Psychology module than those who revise by using phonemic encoding - reading their notes aloud to themselves. She tests their understanding with a written test, scored out of 50 marks.

All Year 10 students take part. Students are told the purpose of the research and advised what they will be required to do and if they volunteer, Georgia writes to their parents to get written consent.

To ensure that the difference between the two groups is due to their revision method, at the end of the module but before they begin revision, she gives students a multiple choice test and allocates them to the semantic or phonemic group so that each group had the same mean score on the pre-test.

|  |  |  |
| --- | --- | --- |
|  | Mean score on multiple choice pre-test | Mean score on Written test |
| Semantic encoding | 64% | 47/50 |
| Phonemic encoding | 64% | 42/50 |

Inferential statistics on the difference between the two groups showed p = .02.

**Question 1**

State the independent variable and dependent variable in operational terms. 2 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 2**

State an appropriate research hypothesis for this research. 3 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 3**

Construct a discussion containing

The conclusion(s) based on the hypothesis (or hypotheses) and statistical analysis.

Weaknesses of the study in terms of sampling procedures; experimental procedures; possible confounding variables.

Suggestions for how a future study could be improved. 10 marks

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_