psyched

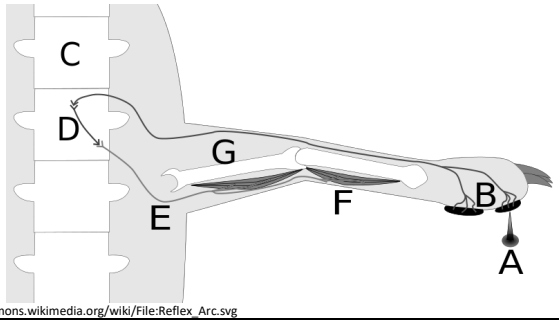
Unit 3 Trial Exam 2020 – Assessment Guide

Section A – Multiple-choice Questions

VCAA Key Knowledge	Question	Answer guide

Use the following information to answer Questions 1- 3.

Tim was walking in the park with his dog Sandy. All of a sudden, Sandy yelped in pain after standing on a sharp object. The image below is a diagram of a reflex arc, with structure A being the sharp object.



https://commons.wikimedia.org/wiki/File:Reflex_Arc.svg

The roles of different divisions of the nervous system (central and peripheral nervous systems and their associated sub-divisions) in responding to, and integrating and coordinating with, sensory stimuli received by the body.	**Question 1** Which of the following is structure B (the first structure that receives an environmental input) in the diagram above? **A.** an effector **B.** a receptor **C.** a sensory neuron **D.** a motor neuron	*B* *Sensory information is received at sensory receptor sites in the body (skin, muscles etc) and carried by sensory neurons up the afferent neural pathway (as part of the peripheral nervous system) to the central nervous system.*

The role of the neuron (dendrites, axon, myelin and axon terminals) as the primary cell involved in the reception and transmission of information across the synapse (excluding details related to signal transduction).	**Question 2** A message is sent up an afferent pathway carried by structure G which is _____; the message is sent down an efferent pathway carried by structure E which is _____. **A.** a sensory neuron; a motor neuron **B.** a motor neuron; a sensory neuron **C.** an effector; a receptor **D.** a receptor; an effector	*A* *Sensory neurons carry sensory information from the sensory receptors up the afferent neural pathway (as part of the peripheral nervous system) to the central nervous system (CNS), while motor neurons carry information down the efferent pathway away from the CNS to the effector muscles.*

The distinction between conscious and unconscious responses by the nervous system to sensory stimuli, including the role of the spinal reflex.

Question 3

During a reflex response, structure D allows an immediate response to occur at the spinal cord. Structure D in the diagram is a/n

A. sensory neuron.
B. motor neuron.
C. interneuron.
D. neuron.

C *Interneurons within the spinal cord receive a sensory message and then relay the message to motor neurons to respond. The immediate response at the spinal cord enables a faster reaction time, a fraction of a second before the sensory information reaches the brain.*

Use the following information to answer Questions 4-6.

Before commencing a new Area of Study, Ms Glum set her VCE Psychology class a short topic test to see how much each student could remember.

The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory.

Question 4

The students' performance on the topic test is dependent on three key processes of memory. These processes are

A. sensory register, processing, storage.
B. sensory memory, short-term memory, long-term memory.
C. storage, processing, retrieval.
D. encoding, storage, retrieval.

D *Encoding, storage and retrieval are the three key processes of memory. Encoding converts information for storage, storage retains information in memory and retrieval recovers the information required for the test.*

Methods to retrieve information from memory or demonstrate the existence of information in memory, including recall, recognition, relearning and reconstruction.

Question 5

The questions on the topic test were in multiple choice form. Which method of retrieval did these questions use?

A. free recall
B. serial recall
C. recognition
D. relearning

C *Recognition involves identifying the correct information amongst alternatives, such as in a multiple-choice question in the test Ms Glum set.*

Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress

Question 6

After marking the test, Ms Glum noticed that one of her students performed poorly. When asked, the student informed her that they were not coping with the VCE workload due to procrastination. If Ms Glum was to suggest an approach coping strategy to this student, it would involve

A. efforts that evade a stressor and deal indirectly with it.
B. efforts to confront a stressor and deal with it directly.
C. taking steps to avoid the stressor.
D. distancing oneself from the stressor.

B *An approach strategy is one that actively confronts and deals directly with the stressor present.*

Use the following information to answer Questions 7-9.

Carol was gifted a skydiving experience for her birthday. On the day of her skydive, she is feeling excited but also terrified. Her heart is racing, her pupils are dilated, the muscles in her legs are tense and she is sweating even though it is a cold day.

The roles of different divisions of the nervous system (central and peripheral nervous systems and their associated sub-divisions) in responding to, and integrating and coordinating with, sensory stimuli received by the body

Question 7

Which of the following changes that Carol experienced are controlled by the activity of the somatic nervous system?

A. dilated pupils
B. increased heart rate
C. tensed leg muscles
D. increased production of sweat

C *The somatic nervous system (a sub-division of the peripheral nervous system) relays sensory and motor messages within our body to and from the central nervous system. Controlling muscle tension in the legs would be a function carried out by the somatic nervous system.*

Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol.

Question 8

Carol is so scared that she is unable to move or even talk when it is her turn to jump. This state is known as

A. paraplegia.
B. paralysis.
C. a freeze state.
D. an immobility state.

C *The fight-flight-freeze response is an immediate response to a threat perceived by an individual. The freeze state is when a person is overwhelmed where they cannot move (flight) or act (fight). As the fear of skydiving (threat) was so strong for Carol, she experienced a freeze state.*

Sources of stress (eustress and distress) including daily pressures, life events, acculturative stress, major stress and catastrophes that disrupt whole communities.

Question 9

Eustress, such as Carol's excitement for her skydiving experience is a positive _____ response that will activate her _____ nervous system.

A. psychological; sympathetic
B. physiological; sympathetic
C. psychological; parasympathetic
D. physiological; parasympathetic

A *Eustress is a positive psychological response to a stressor. Carol perceived the stressor of skydiving to be exciting and thus experienced eustress. This in turn activates the sympathetic nervous system as the body enters a high state of arousal.*

Use the following information to answer Questions 10-12.

Jasmine was cooking dinner in the kitchen when Finn, her three-year-old son, came in and accidentally put his hand on the hot oven – he quickly pulled his hand away and cried in pain.

The distinction between conscious and unconscious responses by the nervous system to sensory stimuli, including the role of the spinal reflex

Question 10

The reflex response of quickly pulling his hand away would be considered a/an _____ process, involving _____.

A. conscious; an interneuron
B. unconscious; an interneuron
C. conscious; the brain
D. unconscious; the brain

B *During a spinal reflex response, sensory neurons carry information from sensory receptors to the spinal cord, where interneurons immediately send an appropriate message to motor neurons to quickly respond. This response would occur without conscious awareness.*

The role of neurotransmitters and neuro-hormones in the neural basis of memory and learning (including the role of glutamate in synaptic plasticity and the role of adrenaline in the consolidation of emotionally arousing experiences)

Question 11

Whenever Finn enters the kitchen, he now knows not to touch the oven due to making the association between the hot oven and the pain he experienced. Which of the following chemicals is important for the formation of Finn's memory of the hot oven?

A. dopamine
B. GABA
C. serotonin
D. glutamate

D *Glutamate is the main neurotransmitter associated with learning. It is an excitatory neurotransmitter which plays a vital role in long term potentiation.*

Classical conditioning as a three-phase process (before conditioning, during conditioning and after conditioning) that results in the involuntary association between a neutral stimulus and unconditioned stimulus to produce a conditioned response, including stimulus generalisation, stimulus discrimination, extinction and spontaneous recovery

Question 12

When they went away for a family holiday the next summer, Jasmine noticed that Finn showed signs of fear of the oven in the holiday house. In terms of classical conditioning, this is an example of

A. stimulus generalisation
B. stimulus discrimination
C. extinction
D. spontaneous recovery

A *Stimulus generalisation is the tendency for another stimulus (oven at the holiday house) that is similar to the original conditioned stimulus (oven at home) to produce a response that is similar to the conditioned response.*

Use the following information to answer Questions 13-15.

Millie's father started to teach her to play the piano. However, after a few years, Millie grew bored of the piano and decided to play the guitar instead.

Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning	**Question 13** When learning occurs, such as when learning to play the piano, which of the following changes are said to occur? **A.** a decreased number of neurons **B.** dendritic sprouting and the formation of new synapses **C.** an increased myelination of dendrites **D.** re-routing of neural impulses	***B***	*Long-term potentiation (LTP) strengthens the synaptic connections in a way that enables postsynaptic neurons to be more easily activated. This process involves the neuron sprouting more dendritic spines in response to repeated activation, such as when learning to play the piano.*

Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning	**Question 14** Millie learning to play the guitar primarily occurs through the process of **A.** an action potential. **B.** long term potentiation. **C.** long term depression. **D.** neural inhibition.	***B***	*Long-term potentiation (LTP) refers to the long-lasting strengthening of synaptic connections, resulting in enhanced synaptic transmission. LTP improves the ability of two adjacent neurons (a presynaptic and a postsynaptic neuron) to communicate with one another at the synapse. When Millie practiced the guitar, she strengthened the relevant neural pathways, leading to enhanced synaptic transmission.*

Methods to retrieve information from memory or demonstrate the existence of information in memory, including recall, recognition, relearning and reconstruction.	**Question 15** Years later, Millie decided to take up playing the piano again. She realised that she was able to learn the piano a lot quicker than when she originally learnt to play with her father as a child. This saving of time was likely due to the process of **A.** reconstruction. **B.** cued recall. **C.** recognition. **D.** relearning.	***D***	*Relearning involves learning information again that has been previously learnt. When relearning the information, it is assumed that some information has been retained from the original learning experience, which leads to a time saving.*

Use the following information to answer Questions 16 and 17.

Georgia was running some errands for things that she needed for a trip overseas. As she was driving, she picked up a call using hands-free Bluetooth from her partner who listed 15 things from the chemist they needed. Not being able to write anything down, she did her best to remember the items, and arrived at the chemist ten minutes later.

The factors influencing a person's ability and inability to remember information, including context and state dependent cues, maintenance and elaborative rehearsal and serial position effect

Question 16

When she arrived at the chemist ten minutes later, Georgia would be more likely to remember the items from the _____ of the list.

A. start and the end
B. start
C. end
D. middle

B *The items at the beginning of the list would likely be transferred into long-term memory because Georgia would have had time to attend to and rehearse the items at the start of the list, making retrieval of these words more likely. The items at the end of the list would no longer be in her short-term memory or would not have been transferred to her long-term memory. This is due to the duration of short-term memory being exceeded due to the delay – the time from listening to the list to purchasing the items at the chemist exceeded the duration of short-term memory.*

The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory.

Question 17

The serial position effect provides evidence to support the notion that _____ is a distinct store of memory to _____.

A. working memory; short-term memory
B. short-term memory; sensory memory
C. sensory memory; long-term memory
D. short-term memory; long-term memory

D *The serial position effect supports the notion that long-term memory (LTM) and short-term memory (STM) are different stores of memory.*

Use the following information to answer Questions 18-20.

George was watching a game of football when two players collided into one another on the field. One was knocked unconscious and the other had broken his arm. Blood had gone everywhere. This was over ten years ago, but George can still picture every detail of what he witnessed.

The reconstruction of memories as evidence for the fallibility of memory, with reference to Loftus' research into the effect of leading questions on eye-witness testimonies.

Question 18

After the match, a paramedic asked George, "How fast were they running when they smashed into each other?" He is most likely to give

A. underestimations of the players' speed.
B. overestimations of the players' speed.
C. accurate estimates of the players' speed.
D. all of the above are equally likely

B *Due to the presence of the leading word 'smashed' in the question rather than a neutral word (such as collided), George is most likely to overestimate the speed of the players.*

The role of neurotransmitters and neuro-hormones in the neural basis of memory and learning (including the role of glutamate in synaptic plasticity and the role of adrenaline in the consolidation of emotionally arousing experiences).

Question 19

George's vivid memories are likely due to the sudden release of _____ into the bloodstream.

A. glutamate
B. dopamine
C. acetylcholine
D. adrenaline

D *George would have experienced a release of adrenaline, given the activation of his sympathetic nervous system. This in turn would have triggered the activation of the amygdala in his brain (which is responsible for fear). This would lead to his hippocampus being signalled to strengthen the consolidation of the event (football collision), hence the stronger memory of the incident.*

Interactions between specific regions of the brain (cerebral cortex, hippocampus, amygdala and cerebellum) in the storage of long-term memories, including implicit and explicit memories

Question 20

Explicit memories, such as remembering the details of the football match, are permanently stored in which part of the brain?

A. cerebral cortex
B. hippocampus
C. parietal lobe
D. amygdala

A *Explicit memories are of information we can consciously retrieve and state (like the details of the incident), are stored throughout the cerebral context.*

Use the following information to answer Questions 21-23.

Julia's grandmother had recently been diagnosed with Alzheimer's disease, so she was surprised when her grandmother was able to recall her 60th birthday party, which was ten years ago.

The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory.

Question 21

Julia's grandmother remembering her 60th birthday party would be considered a _____ long-term memory.

A. procedural
B. semantic
C. episodic
D. implicit

C *Episodic memory is memory of 'autobiographical' episodes we experience. Remembering her 60th birthday party would fall under the category of episodic memory.*

The effects of brain trauma on areas of the brain associated with memory and neurodegenerative diseases, including brain surgery, anterograde amnesia and Alzheimer's disease

Question 22

Julia did some research about Alzheimer's disease and found out that it is thought to be caused by interference with the transmission of neural impulses caused by _____.

A. amyloid tangles
B. glutamate molecules
C. amyloid plaques
D. neurofibrillary plaques

C *Amyloid plaques interfere with neural communication given a build-up of fragments of the protein called beta amyloid. These fragments accumulate over time to form clumps of hard, insoluble plaques outside and around neurons, inhibiting the communication between neurons.*

The effects of brain trauma on areas of the brain associated with memory and neurodegenerative diseases, including brain surgery, anterograde amnesia and Alzheimer's disease

Question 23

She also discovered that late-stage Alzheimer's disease is characterised by

A. an inability to form new memories and loss of procedural memories.
B. extreme difficulty recalling explicit memories and loss of self-awareness.
C. an inability to recognise even the closest relatives.
D. all of the above.

D *A person who suffers from Alzheimer's disease will experience a gradual deterioration of their hippocampus, which results in the person being unable to form new explicit memories; a condition known as anterograde amnesia. As the condition worsens, both declarative and procedural memories are affected, meaning a person may not even recognise a close relative.*

Use the following information to answer Questions 24 and 25.

Daisy suffers from back pain. When the pain appears after a long day at work, she takes medication, and the pain goes away.

Operant conditioning as a three-phase model (antecedent, behaviour, consequence) involving reinforcers (positive and negative) and punishment (including response cost) that can be used to change voluntary behaviours, including stimulus generalisation, stimulus discrimination and spontaneous recovery (excluding schedules of reinforcement).	**Question 24** The behaviour of taking the medication is strengthened by **A.** negative reinforcement. **B.** response cost. **C.** punishment. **D.** positive reinforcement.	*A*	*Negative reinforcement is any unpleasant stimulus that, when removed, strengthens the likelihood of a desired response occurring again. In the example, Daisy's back pain is the unpleasant stimulus. By Daisy taking the medication, the unpleasant feeling is removed, which increases the likelihood that she will perform this behaviour (taking the medication) in the future.*

Operant conditioning as a three-phase model (antecedent, behaviour, consequence) involving reinforcers (positive and negative) and punishment (including response cost) that can be used to change voluntary behaviours, including stimulus generalisation, stimulus discrimination and spontaneous recovery (excluding schedules of reinforcement).	**Question 25** Daisy's back pain is an example of a/an **A.** antecedent. **B.** behaviour. **C.** consequence. **D.** conditioned response.	*A*	*Taking the medication is an example of a behaviour displayed by Daisy which followed the antecedent of her experiencing back pain.*

Use the following information to answer Questions 26 and 27.

Kitty the cat is fed her meal each evening next to the kitchen bench. Harry first uses the can opener to open the tin of cat food on top of the bench, while Kitty rubs up against his legs, purring with excitement.

Classical conditioning as a three-phase process (before conditioning, during conditioning and after conditioning) that results in the involuntary association between a neutral stimulus and unconditioned stimulus to produce a conditioned response, including stimulus generalisation, stimulus discrimination, extinction and spontaneous recovery

Question 26

In terms of classical conditioning, the unconditioned stimulus in this case is the

A. cat food.
B. can opener.
C. purring with excitement.
D. bench top.

A

The unconditioned stimulus is the stimulus that naturally produces the unconditioned response.
In this scenario, food was the stimulus that naturally produced excitement.

Operant conditioning as a three-phase model (antecedent, behaviour, consequence) involving reinforcers (positive and negative) and punishment (including response cost) that can be used to change voluntary behaviours, including stimulus generalisation, stimulus discrimination and spontaneous recovery (excluding schedules of reinforcement).

Question 27

Kitty the cat has now started to jump onto the kitchen bench and steal food. Whenever Harry gets home from work and notices that food is missing from during the day, he yells and locks Kitty out of the kitchen. This strategy is _____ to be successful in teaching Kitty not to steal food, because _____.

A. likely; Kitty's inappropriate behaviour is being negatively reinforced
B. likely; Kitty's inappropriate behaviour is being positively reinforced
C. unlikely; a punisher must precede the unwanted behaviour
D. unlikely; a punisher should come very soon after the unwanted behaviour

D

Punishment is a type of consequence in operant conditioning that is meant to weaken an undesirable behaviour; in this case, the behaviour is the cat jumping onto the bench to steal food. However, in order for punishment to be effective, it should occur soon after the behaviour for the appropriate association to be made.

Classical conditioning as a three-phase process (before conditioning, during conditioning and after conditioning) that results in the involuntary association between a neutral stimulus and unconditioned stimulus to produce a conditioned response, including stimulus generalisation, stimulus discrimination, extinction and spontaneous recovery

Question 28

A behaviour that is acquired through classical conditioning compared to operant conditioning is more likely to be

A. a voluntary action.
B. resistant to extinction.
C. involuntary and reflexive.
D. resistant to spontaneous recovery.

C *Learning via classical conditioning results from the involuntary linking of a neutral stimulus, over a number of trials, with an unconditioned stimulus that normally produces an unconditioned response automatically. The unconditioned response is involuntary and reflexive in nature.*

Use the following information to answer Questions 29 and 30.

Paul was riding his scooter home when a car suddenly reversed out of the driveway and collided with him. He fell from his bike and bumped his head on the pavement. He lay there for a few minutes unable to move.

Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol

Question 29

With reference to Selye's General Adaptation Syndrome, which of the following statements would be true for Paul immediately after the accident occurred?

A. Paul would have entered the shock sub-stage and his resistance would be above normal
B. Paul would have entered the resistance stage and his resistance would be below normal
C. Paul would have entered the shock sub-stage and his resistance would be below normal
D. Paul would have entered the resistance stage and her resistance would be above normal

C *The shock sub-stage of the alarm reaction stage involves the body's resistance to a stressor decreasing momentarily. This causes a number of physiological responses, such as a temporary drop in blood pressure and muscle tone that may have caused Paul not to be able to get up for a few minutes.*

The effects of brain trauma on areas of the brain associated with memory and neurodegenerative diseases, including brain surgery, anterograde amnesia and Alzheimer's disease.

Question 30

Following the accident, Paul's doctor diagnosed him with anterograde amnesia due to damage to his hippocampus. The means that Paul could

A. remember events before the accident but could not form new implicit and explicit memories.
B. remember events before the accident and could form explicit memories but not implicit memories.
C. remember events before the accident and could form implicit memories but not explicit memories.
D. not remember events before the accident but could form new implicit and explicit memories.

C *Anterograde amnesia is associated with damage to the hippocampus which causes a person to be unable to form new explicit memories, but their old memories are still intact. In Paul's case, implicit memories may still be able to be formed using other parts of the brain, such as the cerebellum.*

The multi-store model of memory (Atkinson-Shiffrin) with reference to the function, capacity and duration of sensory short-term and long-term memory	**Question 31** Which of the following memory stores has the smallest capacity? **A.** iconic memory **B.** echoic memory **C.** short-term memory **D.** long-term memory	*C*	*Our short-term memory (STM) has a limited duration and capacity. The capacity of STM is said to be 7±2 pieces of information, whereas the capacity of sensory memory and long-term memory are potentially unlimited.*

Use the following information to answer Questions 32 and 33.

For the past few months, Laura has been experiencing a lot of stress with the arrival of her new baby and being a single mother. When she first brought her baby home, she felt like she was coping; however, after a few months of sleep deprivation and no support, she was experiencing daily migraines, which prevented her from being able to care for her baby properly.

Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol	**Question 32** In terms of Selye's General Adaptation Syndrome (GAS), it is most likely that when Laura first brought her baby home, she was in the _____ stage; however, her inability to care for her baby properly due to her daily migraines is indicative of the _____ stage. **A.** alarm reaction; resistance **B.** resistance; exhaustion **C.** shock; countershock **D.** shock; exhaustion	*B*	*In the resistance stage Laura was coping with being a single mother, however, not being able to respond to the stressor effectively is indicative of the exhaustion stage.*

Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress	**Question 33** When Laura's friends and family asked her if she needed help, she denied the fact that she was not coping. Laura's response is an example of a/an **A.** primary appraisal. **B.** secondary appraisal. **C.** approach strategy. **D.** avoidance strategy.	*D*	*Avoidance strategies involve a person indirectly dealing with the stressor and its effects, which can prevent them from responding to stressors in a more constructive way, meaning the stressor is more likely to persist. Laura's denial is a form of avoidance, which prevented her from receiving the help that she needed.*

Use the following information to answer Questions 34 and 35.

Pat was sitting in his Psychology class when the teacher asked him to identify the types of sensory memory. His heart rate immediately increased, and he started to sweat. He was unable to answer the teacher's question in class, but when he was home in his room later that day, he had no problem recalling the answer.

The roles of different divisions of the nervous system (central and peripheral nervous systems and their associated sub-divisions) in responding to, and integrating and coordinating with, sensory stimuli received by the body of reinforcement).

Question 34

The physiological reaction that Pat experienced was under the control of which division of the nervous system?

A. central
B. somatic
C. parasympathetic
D. autonomic

D *Pat's physiological reaction was caused by the activation of his (sympathetic nervous system, governed by the) autonomic nervous system, which increased his heart rate and caused him to sweat.*

The factors influencing a person's ability and inability to remember information, including context and state dependent cues, maintenance and elaborative rehearsal and serial position effect.

Question 35

Pat had initially learned about the types of sensory memory in his room at home, and therefore his _____ acts as a _____ cue for the recall of that information.

A. classroom; state dependent
B. room; state dependent
C. room; context dependent
D. classroom; context dependent

C *Pat's room acted as a context dependent cue as this environment was the place where he had studied the topic. This acted as a retrieval cue to help him access the memory formed in that context.*

Section B – Short Answer and Extended Response Questions

VCAA Key Knowledge	Question	Answer guide

Many years ago, Max was diagnosed with Parkinson's disease which has now progressed to its later stages.

The roles of different divisions of the nervous system (central and peripheral nervous systems and their associated sub-divisions) in responding to, and integrating and coordinating with, sensory stimuli received by the body.	**Question 1a** (4 marks) Prior to his diagnosis, Max was an avid tennis player. Identify the roles of the different divisions of Max's nervous system when watching a ball coming towards him, deciding how to hit it, and hitting the ball back towards his opponent.	**Answer:** • *Max's sensory receptors, particularly (photoreceptors) in his eyes, would receive the image of a ball coming towards him.* • *This message is sent via sensory neurons (up the afferent pathway) to the central nervous system.* • *The brain (part of the central nervous system) processes this message and decides how to hit the ball.* • *This motor message is sent through motor neurons (via the efferent pathway) down to his skeletal muscles to enable Max to hit the ball back towards his opponent.* **Marking protocol:** One mark for each of the above points.

The effects of chronic changes to the functioning of the nervous system due to interference to neurotransmitter function, illustrated by the role of dopamine in Parkinson's disease.	**Question 1b** (2 marks) What are two possible motor symptoms that Max might now be showing since his diagnosis?	**Answer:** • *(Resting) tremor* • *Rigidity* • *Loss of balance / postural instability* • *Gait (walking) disturbances / shuffling gait* • *Bradykinesia (slowness of voluntary movement)* • *Akinesia / inability to move – freezing* **Marking protocol:** One mark for any appropriate motor symptom, to a maximum of two.

The effects of chronic changes to the functioning of the nervous system due to interference to neurotransmitter function, illustrated by the role of dopamine in Parkinson's disease.	**Question 1c** (3 marks) With reference to the brain area and neurotransmitter involved, explain why Max was experiencing the motor symptoms outlined in 1b.	**Answer:** • *People with Parkinson's disease have fewer dopamine-producing neurons and thus less of the neurotransmitter dopamine.* • *This is due to the degeneration of the brain region known as the substantia nigra which normally contains a high number of neurons that produce dopamine.* • *Dopamine normally helps an individual to produce well-controlled bodily movements, and therefore motor functioning is disrupted/uncoordinated as a result of the dopamine deficiency in Parkinson's disease.* **Marking protocol:** One mark for each of the above points.

Henry has been playing basketball for several years, but this season, he has a new coach who has identified some errors in his existing shooting technique. His coach is teaching him a new technique that involves holding the ball above his head and keeping his feet placed together on the ground.

Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning.	**Question 2a** (2 marks) Outline the roles of long-term potentiation and long-term depression when Henry learns the new shooting technique.	**Answer:** • *Long-term potentiation – Henry's synaptic connections that are responsible for the new shooting technique will be strengthened (via repeatedly practice of the new shooting technique).* • *Long-term depression – as Henry practices the new technique, the synaptic connections associated with the old shooting technique would gradually weaken.* **Marking protocol:** One mark for each of the above points. Note: the answer must refer to the scenario in some way, otherwise, a maximum of one mark is awarded.

Neural plasticity and changes to connections between neurons (including long-term potentiation and long-term depression) as the fundamental mechanisms of memory formation that leads to learning	**Question 2b** (1 mark) Identify one neurological change that occurs during long-term potentiation.	**Answer:** • *Dendritic sprouting/growth of dendritic spines.* • *Growth of new synapses/connections (synaptogenesis).* • *Increased number of receptor sites on the (dendrites of the) post-synaptic neuron.* • *Increased release of neurotransmitters from the (axon terminals of the) pre-synaptic neuron.* **Marking protocol:** One mark for any of the above points, to a maximum of one.

Observational learning as a method of social learning, particularly in children, involving attention, retention, reproduction, motivation and reinforcement.	**Question 2c** (5 marks) In order to teach Henry a new technique, his coach shows him some videos of elite basketball players to model the ideal shooting technique. Describe how each of the elements of observational learning may be applied to the learning of this technique.	**Answer:** • *Attention: Henry would actively focus on the instructional videos.* • *Retention: Henry would form and store a mental representation of the shooting technique.* • *Reproduction: Henry would need to have the physical capacity to perform the shooting technique.* • *Motivation: Henry would have an incentive to improve his game by shooting more effectively, leading him to want to adopt the new technique.* • *Reinforcement: As Henry's shooting improves with the new technique, he will experience a sense of accomplishment that strengthens the behaviour.* **Marking protocol:** One mark for each of the above points. Note: each stage must refer to the scenario in some way, otherwise the mark is not awarded.

Interactions between specific regions of the brain (cerebral cortex, hippocampus, amygdala and cerebellum) in the storage of long-term memories, including implicit and explicit memories	**Question 2d** (3 marks) Name and explain the type of memory involved in the consolidation of the new shooting technique, and identify the relevant brain area that encodes this information.	**Answer:** • *The new shooting technique is a form of implicit memory/procedural memory.* • *These memories are for physical actions/behaviours that do not require conscious recollection.* • *The cerebellum (as well as the motor cortex and striatum) is the brain area involved in the consolidation of implicit/procedural memory.* **Marking protocol:** One mark for each of the above points.

Watson and Rayner demonstrated with 'Little Albert' that it is possible to condition an emotional response, such as fear.

The 'Little Albert' experiment as illustrating how classical conditioning can be used to condition an emotional response, including ethical implications of the experiment.	**Question 3a** (6 marks) Using the language of classical conditioning, explain how Little Albert's fear was acquired.	**Answer:** • *Before conditioning, white rats were a neutral stimulus, which generated no fear response.* • *During conditioning, Little Albert was repeatedly exposed to the white rat (neutral stimulus), closely followed by a loud noise (a hammer struck on a metal bar – the unconditioned stimulus) that generated the unconditioned response of fear to the loud noise.* • *After conditioning, rats became the conditioned stimulus, which automatically elicited a conditioned response of a fear of white rats.* **Marking protocol:** • One mark for identifying the neutral stimulus (NS) as white rats. • One mark for identifying the unconditioned stimulus (UCS) as the loud noise. • One mark for identifying the unconditioned response (UCR) as fear of the loud noise. • One mark for identifying that the repeated pairing of the NS followed by the UCS was necessary for the acquisition of the fear. (Note: no marks are awarded for this point if the UCS comes before the NS – answers must show that the NS is presented before the UCS) • One mark for identifying the conditioned stimulus (CS) as white rats after conditioning. • One mark for identifying the conditioned response (CR) as fear of white rats.

The 'Little Albert' experiment as illustrating how classical conditioning can be used to condition an emotional response, including ethical implications of the experiment.	**Question 3b** (2 marks) Explain how the ethical principle of informed consent should have been carried out in the Little Albert experiment.	**Answer:** • *Watson and Rayner should have fully informed Little Albert's legal guardian/mother (as Little Albert is too young to consent himself) about the true nature of the study, its aims, procedures and potential risks to his wellbeing (and the ability to withdraw him at any point).* • *Consent should be documented in a signed consent form.* **Marking protocol:** One mark for each of the above points.

Ella has suffered from severe epileptic seizures since she was born. Unfortunately, her epilepsy has been resistant to medication, so a decision was made to remove her amygdalae (the amygdala on each side of her brain), which had been identified as the area causing the seizures.

Sources of stress (eustress and distress) including daily pressures, life events, acculturative stress, major stress and catastrophes that disrupt whole communities.	**Question 4a** (1 mark) Why could Ella's brain surgery not be considered a catastrophe?	**Answer:** • *Ella's surgery applies only to her (and potentially her immediate social network), and does not disrupt or impact whole communities (which is characteristic of a catastrophe).* **Marking protocol:** One mark for the above point.

The effects of brain trauma on areas of the brain associated with memory and neurodegenerative diseases, including brain surgery, anterograde amnesia and Alzheimer's disease	**Question 4b** (1 mark) Describe the potential impact of the brain surgery on Ella's memory.	**Answer:** • *The removal of her amygdalae could result in her not being able to consolidate emotional memories (particularly those relating to fear).* **Marking protocol:** One mark for the above point.

Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol.	**Question 4c** (5 marks) Ella was very frightened as she entered the hospital on the morning of her surgery, but once she took some deep breaths, she managed to calm herself down. Three hours later, she finally entered the operating theatre, and continued to breathe normally. Identify and describe the functions of both divisions of the autonomic nervous system with reference to Ella's experience in hospital.	**Answer:** • *Ella's sympathetic nervous system would be activated as she entered the hospital for her surgery.* • *This would activate the fight-flight response / would release stress hormones (for example, adrenaline) into the bloodstream / increase her heart rate / decrease her digestive functioning / increase her breathing rate / dilate her pupils, to prepare her body to deal with the threat.* • *Ella's parasympathetic nervous system would be activated as she calmed herself down.* • *The parasympathetic nervous system has a role in counteracting the activities of the sympathetic nervous system, to try to bring the body to homeostasis (optimal levels of functioning) – Ella aimed to do this by taking deep breaths.* • *The parasympathetic nervous system also plays a role in maintaining homeostasis, indicated by the continuation of normal functioning by the time she entered the operating theatre.* **Marking protocol:** One mark for each of the above points.

Erin and Rani had booked a ticket to go on one of the world's biggest rollercoaster rides in a month. Erin had been feeling anxious about the ride for weeks and is very worried about feeling sick. She had never been on a rollercoaster ride before, but she did not want to disappoint Rani by not joining her. As much as she could, Erin tried not to think about the rollercoaster ride in the weeks beforehand. When the day had arrived and as she was lining up for the ride, Erin noticed her heart rate had increased rapidly.

Her friend Rani had always loved thrill rides and had been looking forward to it for weeks. Rani had been on many rollercoasters in the past and really got a buzz out of them. She wanted to tackle the world's largest rollercoaster and share her experience on social media. When Rani first started going on rollercoaster rides as a child, she heard that chewing gum while on the ride could prevent her from feeling sick, and she had found this strategy to be effective ever since.

Below is a table of the heart rate data in beats per minute (bpm) from both the girls' smart watches.

Time	Heart rate (bpm)	
	Erin	Rani
Normal	80	80
Immediately before the ride	140	92
During the ride	155	141
After the ride	109	95

Sources of stress (eustress and distress) including daily pressures, life events, acculturative stress, major stress and catastrophes that disrupt whole communities.

Models of stress as a biological process, with reference to Selye's General Adaptation Syndrome of alarm reaction (shock/counter shock), resistance and exhaustion, including the 'fight-flight-freeze' response and the role of cortisol.

Models of stress as a psychological process, with reference to Richard Lazarus and Susan Folkman's Transactional Model of Stress and Coping

Question 5 (10 marks)
Discuss Erin and Rani's differing stress responses to the rollercoaster.

In your answer, include a discussion of:
- Lazarus and Folkman's Transactional Model of Stress and Coping
- Eustress and distress, with reference to the data in the table
- Approach and avoidance strategies
- Coping flexibility
- Context-specific effectiveness

Sample answer:

- *The Transactional Model of Stress and Coping suggests that a person's experience of stress is based on an interpretation of the stressor by the individual. This can therefore explain why Erin and Rani's reactions to going on the world's biggest rollercoaster ride differ.*
- *This (differing stress responses depending on an individual's appraisal) can be seen to be a strength of the Transactional Model of Stress and Coping, even though it overlooks physiological processes.*
- *Erin would first undertake primary appraisal, determining if the situation is significant, and assessing if it is stressful, irrelevant or benign-positive to her.*
- *Erin feels anxious about going on the ride and would consider the rollercoaster ride as highly stressful, with the potential of it being a threat (i.e., danger to oneself in future, such as feeling sick) rather than irrelevant or benign/positive.*
- *Having perceived the ride as stressful, secondary appraisal follows, where she would consider what coping options, resources and strategies she has to deal with the stressor.*
- *Erin's stress is exacerbated by her secondary appraisal that the rollercoaster ride may exceed her ability and available resources to cope, which would likely lead her to experiencing stress.*
- *In the lead up to the ride, she had used an avoidance strategy. An avoidance strategy is used when an individual does not make an attempt to actively engage with the stressor, given that she tried not to think about the rollercoaster ride in the weeks beforehand.*

(stages of primary and secondary appraisal)

Context-specific effectiveness, coping flexibility and use of particular strategies (exercise and approach and avoidance strategies) for coping with stress

- *On the other hand, Rani is looking forward to the rollercoaster ride, and she would most likely appraise the ride as 'relevant', 'stressful' and a 'challenge', in primary appraisal. This is because her interpretation of going on the world's largest rollercoaster was seen as an opportunity for personal growth.*
- *In secondary appraisal, Rani is likely to have adequate resources to cope, as it states that she coped by using a strategy of chewing gum while on rollercoaster rides to avoid feeling sick.*
- *If chewing gum helps to distract Rani from the motion, this can be viewed as a type of avoidance strategy, as it helps Rani to disengage with the stressful motions of the rollercoaster ride. Alternatively, the strategy of chewing gum could also be considered an approach strategy, if this helps Rani to focus her attention on the thrill of the ride (that arises from the stressor), instead of feeling sick.*

- *Going on the world's largest rollercoaster ride is stressful for both Erin and Rani, but Rani appears to have adequate coping strategies, whereas Erin likely does not.*
- *The scenario shows that both girls experienced a form a stress; Erin likely experienced distress (a negative psychological response to a stressor), while Rani likely experienced eustress (a positive psychological response to a stressor). Both lead to the same sympathetic nervous system activation (fight-flight response) as shown by the heart rate data from the girls' smart watches. During the ride, both girls had a spike in their heart rate, which we can infer is due to the stress they experienced.*

- *If Erin was able to recognise that her avoidance strategy was ineffective, discontinue the ineffective coping strategy, and implement an alternative coping strategy, such as speaking to Rani for advice, she could be seen to have high levels of coping flexibility. Seeking advice from Rani could be considered an approach strategy, as it would allow Erin to deal with the stressor in a constructive way, allowing her to cope more effectively in the situation.*
- *If Erin can deal more effectively with the stressor, this would lead her to have higher levels of context-specific effectiveness, which is the degree to which a coping strategy is able to suit the characteristics of the stressor and the individual.*
- *Rani's strategy of chewing gum appears to have high levels of context-specific effectiveness, given that it suits her and the stressful situation well. If she continues to evaluate the effectiveness of this strategy, and only continues to use the strategy for as long as it is effective, then this also demonstrates high levels of coping flexibility.*
- *Approach strategies are generally considered to be more effective than avoidance strategies to help minimise the long-term persistence of the stressor. However, complete avoidance of the rollercoaster ride might also have led to higher context-specific effectiveness for Erin, given her anxieties about rollercoaster rides.*

Marking protocol:

This question is marked holistically out of a total 10 marks.
Outstanding responses will:
- Demonstrate an understanding of the Transactional Model of Stress and Coping in terms of how Erin and Rani responded differently to the same stressor (the rollercoaster ride).
- Discuss the likely primary and secondary appraisals for both Erin and Rani based on the information provided in the scenario.
- Evaluate the data in relation to eustress and distress.
- Discuss the fact that both girls displayed the same physiological response to stress.
- Identify and discuss the different coping strategies used by Erin and Rani.
- Discuss coping flexibility and context-specific effectiveness, related to dealing with the stressor of the rollercoaster.
- Ensure that the response relates to the information provided and is not a generic answer.

Above is an example of a response that would achieve 10 marks.

The following dot points list the criteria that are outlined in the 2017-2021 VCE Psychology exam specifications for the marking of 10-mark questions.

In terms of this criteria, a 10-mark answer would:

• identification and explanation of formal psychological terminology relevant to the question	Explicitly name and explain the different appraisals (primary and secondary).
• use of appropriate psychology terminology	Use key terms from the study design relevant to the question.
• discussion of relevant psychological information, ideas, concepts, theories and/or models and the connections between them	Outline the Lazarus and Folkman model and the different coping strategies associated with the scenario.
• analysis and evaluation of data, methods and scientific models	Evaluate the data in terms of their response to stress (eustress and distress), as well as the effectiveness of each of the girls' coping strategies
• drawing of evidence-based conclusions and explanation of limitations of conclusions	Draw on the information provided in the scenario to make conclusions.

psyched

VCE PSYCHOLOGY

Written Examination

ANSWER SHEET – 2020

STUDENT NAME:

Use a **PENCIL** for **ALL** entries. For each question, shade the box which indicates your answer.
Marks will **NOT** be deducted for incorrect answers.
NO MARK will be given if more than one answer is completed for any question.
If you make a mistake, **ERASE** the incorrect answer – **DO NOT** cross it out.

1	A	**B**	C	D	19	A	B	C	**D**
2	**A**	B	C	D	20	**A**	B	C	D
3	A	B	**C**	D	21	A	B	**C**	D
4	A	B	C	**D**	22	A	B	**C**	D
5	A	B	**C**	D	23	A	B	C	**D**
6	A	**B**	C	D	24	**A**	B	C	D
7	A	B	**C**	D	25	**A**	B	C	D
8	A	B	**C**	D	26	**A**	B	C	D
9	**A**	B	C	D	27	A	B	C	**D**
10	A	**B**	C	D	28	A	B	**C**	D
11	A	B	C	**D**	29	A	B	**C**	D
12	**A**	B	C	D	30	A	B	**C**	D
13	A	**B**	C	D	31	A	B	**C**	D
14	A	**B**	C	D	32	A	**B**	C	D
15	A	B	C	**D**	33	A	B	C	**D**
16	A	**B**	C	D	34	A	B	C	**D**
17	A	B	C	**D**	35	A	B	**C**	D
18	A	**B**	C	D					