



YEAR 12 *Trial Exam Paper*

2020

PSYCHOLOGY

Written examination

Sample responses

This book presents:

- high-level sample responses
- explanatory notes
- mark allocations
- tips.

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SECTION A – Multiple-choice questions

Question	Answer
1	<i>D</i>
2	<i>C</i>
3	<i>A</i>
4	<i>D</i>
5	<i>D</i>
6	<i>A</i>
7	<i>B</i>
8	<i>C</i>
9	<i>B</i>
10	<i>B</i>
11	<i>D</i>
12	<i>C</i>
13	<i>B</i>
14	<i>B</i>
15	<i>D</i>
16	<i>B</i>
17	<i>A</i>
18	<i>A</i>
19	<i>B</i>
20	<i>D</i>
21	<i>B</i>
22	<i>D</i>
23	<i>B</i>
24	<i>C</i>
25	<i>A</i>

Question	Answer
26	<i>C</i>
27	<i>B</i>
28	<i>C</i>
29	<i>D</i>
30	<i>C</i>
31	<i>B</i>
32	<i>A</i>
33	<i>B</i>
34	<i>B</i>
35	<i>C</i>
36	<i>A</i>
37	<i>C</i>
38	<i>C</i>
39	<i>B</i>
40	<i>A</i>
41	<i>C</i>
42	<i>C</i>
43	<i>C</i>
44	<i>C</i>
45	<i>A</i>
46	<i>D</i>
47	<i>A</i>
48	<i>B</i>
49	<i>C</i>
50	<i>C</i>

Question 1**Answer: D****Explanatory notes**

Option D is correct because part 1 is the myelin sheath. Its role is to insulate the axon and stop interference from nearby neurons.

Question 2**Answer: C****Explanatory notes**

Option C is correct because part 2 is the axon. When a neuron transmits information, the axon's job is to transmit the information received by the dendrites through to the axon terminal. This then allows neurotransmitters to be released across the synapse (and between neurons).

Question 3**Answer: A****Explanatory notes**

Option A is correct because interneurons produce or initiate the motor response in a spinal reflex. This is adaptive because it results in a fast response, as the information is not required to first travel to the brain. Interneurons then relay this motor message along motor neurons in the peripheral nervous system so that it can be communicated to muscles in the body.

The major difference between unconscious responses (such as a spinal reflex) and conscious responses is that conscious responses usually involve the brain, and as such involve an awareness that unconscious responses do not. This is often why a person does not feel pain until after the spinal reflex response has occurred; the sensory information does not reach the brain to form a conscious awareness of the stimuli until after the response has been carried out.

Question 4**Answer: D****Explanatory notes**

Option D is correct because Layal is having a negative psychological response to the stressor. This would involve sympathetic nervous system activation, or increased arousal, leading to an increase in sweat production.

**Tip**

- *Eustress is a positive psychological response to a stressor, while distress is a negative psychological response to a stressor. They both result in the same biological responses: increased arousal and activation of the sympathetic nervous system.*

Question 5***Answer: D*****Explanatory notes**

Option D is correct because Layal is likely to be in the resistance stage due to the prolonged stress of preparing for the half-marathon. The pressure of dealing with the half-marathon and the additional stressor of her dog falling ill and requiring surgery would have placed strain on her bodily systems such as her immune system, making her feel tired and run down.

Question 6***Answer: A*****Explanatory notes**

Option A is correct because cortisol would give Layal more energy to cope with the stress of the half-marathon and her dog falling ill and requiring surgery. However, over time the cortisol would impair her immune system, making her more likely to get sick.

Question 7***Answer: B*****Explanatory notes**

Option B is correct because Selye's General Adaptation Syndrome does not account for individual differences in stress responses, such as how we interpret a stressor and how we respond psychologically.

Question 8***Answer: C*****Explanatory notes**

Option C is correct because running a half-marathon is a life event that has forced Layal to make changes, such as fitting in training runs each week. Her dog falling ill and requiring surgery was a major stressor because it was extraordinarily stressful or disturbing when she experienced it.

Question 9***Answer: B*****Explanatory notes**

Option B is correct because this strategy best fits the stressor and the situation, which is Layal's dislike of running in cold weather. Therefore, it shows high context-specific effectiveness.

Question 10**Answer: B****Explanatory notes**

Option B is correct because GABA is an inhibitory neurotransmitter, which means that it will bind to a complementary-shaped receptor site (not the same molecular shape) on the dendrites of the post-synaptic neuron and make it less likely to fire.

Question 11**Answer: D****Explanatory notes**

Option D is correct because the unconditioned stimulus of the loud noise (caused by banging the saucepan with the spoon) would be associated with the dog (neural stimulus), leading to the infant fearing the dog.

**Tip**

- *Remember that classical conditioning always involves the association of two stimuli, not a stimulus and a response. The goal of classical conditioning is to train or teach an individual or animal to produce a reflexive response to a stimulus that would not naturally produce a response.*

Question 12**Answer: C****Explanatory notes**

Option C is correct because the infant would be producing a conditioned response of fear towards stimuli (cats, foxes and rabbits) that are similar to the original conditioned stimulus (Fido the dog).

Question 13**Answer: B****Explanatory notes**

Option B is correct because the role of the experimenter is to protect the participant from psychological and physiological harm.

Question 14**Answer: B****Explanatory notes**

Option B is correct because the amygdala is responsible for consolidating emotionally arousing, classically conditioned responses that often involve fear. This is an example of an implicit memory because it does not require conscious awareness or recall.

Question 15

Answer: D

Explanatory notes

Option D is correct because long-term depression involves low-level stimulation that leads to a weakening of the connections between neurons in a neural pathway. In this case, neurons in the infant's brain connecting the dog (conditioned stimulus) and the loud noise (unconditioned stimulus) would be weakened as a result of the dog being presented without the loud noise (low-level stimulation).

Question 16

Answer: B

Explanatory notes

Option B is correct because average response time is a measure of the speed of the participants' response to a stimulus. The participants' ability to find mistakes in a passage of writing is a measure of accuracy.

Question 17

Answer: A

Explanatory notes

Option A is correct because the same participants were involved in the experimental condition (sleep deprivation) and the control condition (no sleep deprivation).

Question 18

Answer: A

Explanatory notes

Option A is correct because the intended population was university students and the results of the two tests show that their speed and accuracy were impaired when participants were sleep deprived.

Question 19

Answer: B

Explanatory notes

Option B is correct because the researcher used a convenience sample of university students who responded to an advertisement. This method is less time-consuming than other sampling methods because every member of the population does not need to be given an equal chance to be included in the sample.

Question 20

Answer: D

Explanatory notes

Option D is correct because sleep-deprived participants would be less alert and less aroused than participants who had a full night of sleep. The EMG would show decreased electrical activity in the muscles (less muscle tension) when participants were sleep deprived and increased electrical activity in the muscles (due to muscle tension) when they were not sleep deprived. The EEG would show decreased alertness when participants were sleep deprived through slower (decreased frequency) and higher (increased amplitude) brain waves compared to when they were not sleep deprived.

Question 21

Answer: B

Explanatory notes

Option B is correct because glutamate assists with the formation of long-term memories (through the process of LTP).

Question 22

Answer: D

Explanatory notes

Option D is correct because the hippocampus is responsible for the consolidation of information from short-term to long-term memory, especially explicit (personal) memories.

Question 23

Answer: B

Explanatory notes

Option B is correct because cued recall involves Yannick being provided with a trigger (the photos) for retrieving a memory.

Question 24

Answer: C

Explanatory notes

Option C is correct because anterograde amnesia involves an inability to form and store new explicit long-term memories, such as what you ate for breakfast.

Question 25

Answer: A

Explanatory notes

Option A is correct because flashcards rely on simple repetition of the information. This helps information to be retained in short-term memory for longer, and hopefully transfers it into long-term memory. The other options all involve aspects of elaborative rehearsal.

Question 26

Answer: C

Explanatory notes

Option C is correct because Loftus manipulated the verb that was used when asking the question ‘how fast were the cars travelling when they _____?’ Verbs such as ‘smashed’, ‘collided’, ‘hit’ or ‘bumped’ were inserted into the question.

Question 27

Answer: B

Explanatory notes

Option B is correct because Simon is saying ‘sit’ before the behaviour to trigger it. This is an environmental stimulus that causes Rex’s behaviour of sitting.

Question 28

Answer: C

Explanatory notes

Option C is correct because spontaneous recovery occurs after extinction and a rest period, and the subject once again shows the response (sitting) to the antecedent (Simon saying ‘sit’) in the absence of any reinforcement (a treat).

Question 29

Answer: D

Explanatory notes

Option D is correct because classical conditioning only involves reflexive, simple, passive and involuntary responses. Rex sitting is a voluntary behaviour that is being performed to get the reinforcement (a treat).

**Tip**

- *Be sure to understand how the models of learning differ from each other – particularly the difference between operant and classical conditioning – because an understanding of this may be expected in the exam. Operant and classical conditioning differ in terms of the type of response they involve (classical is reflexive, whereas operant is voluntary), among other things.*

Question 30*Answer: C***Explanatory notes**

Option C is correct because the function of short-term memory is to hold information for 18–30 seconds to be able to work with it while it is in our conscious awareness.

Question 31*Answer: B***Explanatory notes**

Option B is correct because our thoughts can be more bizarre when we are sleeping (e.g. when dreaming), which indicates less content limitation. We are also less accurate at predicting how much time has passed when we have been sleeping; therefore, time orientation is less accurate. Both of these are characteristics of an altered state of consciousness.

Question 32*Answer: A***Explanatory notes**

Option A is correct because, throughout the night, the proportion of time spent in REM sleep increases while the proportion of time spent in NREM sleep decreases.

Question 33*Answer: B***Explanatory notes**

Option B is correct because NREM 2 is a transitional stage. We go through this stage to move from REM sleep into the NREM 3 and NREM 4 deep sleep stages. We spend about 50% of our total sleep time in NREM 2.

Question 34*Answer: B***Explanatory notes**

Option B is correct because the y-axis represents the operationalised dependent variable, which is the average mood rating out of five.

Question 35*Answer: C***Explanatory notes**

Option C is correct because when travelling west, we are travelling in the apparent pathway of the sun. This lengthens our normal day, which is easier for our natural body clock (circadian rhythm) to adjust to. Therefore, travelling west results in milder symptoms of jet lag than travelling east.

Question 36**Answer: A****Explanatory notes**

Option A is correct because having half of the participants fly west and then east, and the other half fly east and then west, is an example of counterbalancing. This procedure was required because the study used a repeated measures design. If all participants completed the conditions (west vs east) in the same order, this may have created an order effect. Hence, the psychologist has controlled for this confounding variable.

Question 37**Answer: C****Explanatory notes**

Option C is correct because bright light therapy is used to inhibit melatonin secretion. The therapy would be most effective when used first thing in the morning at the flight attendants' destination. This would stop melatonin production and synchronise the flight attendants' sleep patterns with their external environment.

**Tip**

- *It is essential to know the best time to administer bright light therapy, not only for jet lag, but also for teenagers with a sleep-phase disorder and people suffering from insomnia as a result of shift work. For both jet lag sufferers and teenagers, bright light therapy is most effective when given first thing in the morning for at least 30 minutes. For people who work night shift, bright light therapy is best when used just before their shift begins and while they are at work. Shift workers could use bright light therapy first thing in the morning when trying to resynchronise their sleep–wake cycle with their external environment.*

Question 38**Answer: C****Explanatory notes**

Option C is correct because one difference between a phobia and anxiety is that phobias are a diagnosable mental disorder, whereas anxiety can vary along the mental health continuum. Anxiety can progress from a mental health problem to a mental disorder if not treated or managed properly.

Question 39

Answer: B

Explanatory notes

Option B is correct because classical conditioning involves the repeated association between a conditioned stimulus and an unconditioned stimulus, which precipitates a phobic response. The conditioned stimulus triggers or leads to the onset of the phobia. In this case, the conditioned stimulus was birds and the unconditioned stimulus was being swooped by the magpie.

Question 40

Answer: A

Explanatory notes

Option A is correct because Richard has been conditioned to fear birds. This is a result of the repeated association between birds (which were previously a neutral stimulus) and being swooped by a magpie (unconditioned stimulus), which caused him fear and pain (conditioned response).

Question 41

Answer: C

Explanatory notes

Option C is correct because memory bias involves distorted recollections of events that perpetuate fear. For Richard, this would involve remembering getting swooped by the magpie that injured him.

Question 42

Answer: C

Explanatory notes

Option C is correct. Memory bias would be a cognitive contributing factor because it involves a mental process (memory). In addition, the memory bias is perpetuating because once Richard developed the phobia, his memory bias would maintain the phobia.

Question 43

Answer: C

Explanatory notes

Option C is correct because the cognitive part of cognitive behavioural therapy would involve trying to change Richard's thoughts into more realistic, helpful thoughts. Looking up statistics about bird attacks would enable Richard to understand that the likelihood of being attacked is minimal.

Question 44**Answer: C****Explanatory notes**

Option C is correct because benzodiazepines are inhibitory medications that act on post-synaptic neurons, making them less likely to fire. This suppresses the symptoms of anxiety because it minimises neural activity.

**Tip**

- *As well as understanding how agonist medications work, you must understand how antagonist medications work even though this is not explicitly stated in the Study Design, as this content was examined in a previous VCAA exam. You should understand that when an antagonist binds to a matching receptor, it will block it and stop the neurotransmitter from doing its job.*

Question 45**Answer: A****Explanatory notes**

Option A is correct because Parkinson's disease causes the dopamine-producing neurons in the substantia nigra to die. This results in a decline in dopamine levels.

Question 46**Answer: D****Explanatory notes**

Option D is correct because neurohormones are released into the bloodstream and can therefore travel throughout the body. In contrast, neurotransmitters are most commonly released into the synaptic gap which means they can only travel to post-synaptic neurons.

Question 47**Answer: A****Explanatory notes**

Option A is correct because a rating scale involves students selecting a number to represent their attitude. Therefore, it is quantitative data. The teacher obtains this data directly from her students, which means it is primary data.

Question 48**Answer: B****Explanatory notes**

Option B is correct because amyloid plaques are clusters of protein fragments that build up outside of the neuron and impair neural transmission. This is a common symptom of Alzheimer's disease.

Question 49

Answer: C

Explanatory notes

Option C is correct because joining a support group is a social protective factor, using cognitive behavioural strategies is a psychological protective factor and adequate sleep is a biological protective factor.

Question 50

Answer: C

Explanatory notes

Option C is correct because the best way for the doctor to obtain consent is from the patient directly. However, this would need to be done before Fran's symptoms progress or during a period of time in which she is thinking clearly and her memory is functioning properly.

SECTION B

Question 1a.

Sample response

The neurotransmitter predominantly involved in Ariella learning to play the song 'Für Elise' is glutamate. Every time Ariella practised playing the song on her flute, she would have repeatedly stimulated the neural pathway in her brain that is associated with her learning the song. As a result, the neurons in this pathway would have released glutamate, an excitatory neurotransmitter, which would make the post-synaptic neurons more likely to fire. This would have strengthened the neural connections in this pathway, increasing the likelihood of the same neurons firing again in the future, releasing more glutamate and making it easier for Ariella to play the song without needing her sheet music.

Mark allocation: 4 marks

- 1 mark for identifying glutamate as the neurotransmitter involved in the process
- 1 mark for stating that long-term potentiation involves repeated stimulation of the same neural pathway; for example, Ariella was repeatedly activating the pathway associated with learning to play the song 'Für Elise' every time she practised
- 1 mark for stating that glutamate would be released every time this pathway is activated, making the neurons more likely to fire (because glutamate is an excitatory neurotransmitter)
- 1 mark for stating that this would have strengthened the neural connections in the pathway, increasing the likelihood of these neurons firing again in the future, making it easier for Ariella to play the song without needing her sheet music

Question 1b.

Sample response

According to Lazarus and Folkman's model, Ariella would first determine if the school concert was significant or stressful. Given that she is feeling nervous and worried, it seems that she has perceived the school concert to be significant and stressful. She has further determined that the school concert is a threat because she believes there could be future harm or loss when performing at the school concert. This would be in the form of embarrassment in front of her family and friends.

Mark allocation: 2 marks

- 1 mark for explaining that primary appraisal would involve Ariella determining the significance of the event and recognising that, for her, it is stressful and significant because she is nervous and worried
- 1 mark for explaining that Ariella would then evaluate what type of stress it is (harm, loss, threat or challenge); for example, Ariella has determined the school concert to be a threat because she believes that there could be future harm or loss in the form of embarrassment when performing in front of her family and friends

Question 1c.**Sample response**

An approach strategy that Ariella could use involves dealing with the stressor directly. For example, Ariella could practise playing 'Für Elise' in front of her family or friends to feel less nervous about performing in the school concert. By using this strategy, Ariella would be able to more effectively cope with her nerves at the concert, which should help her to feel more in control of the situation and feel less stressed about it.

Mark allocation: 2 marks

- 1 mark for suggesting an appropriate strategy that deals directly with the stressor; for example, practising at home in front of her friends and family
- 1 mark for explaining how this strategy would be advantageous to Ariella in this situation

Question 1d.**Sample response**

Coping flexibility is the ability to effectively evaluate and modify or adjust one's coping strategies according to the demands of different stressful situations. If Ariella had high coping flexibility, then she would be able to recognise if her current strategy was not helping to reduce her nerves and would adapt or change to another strategy.

Mark allocation: 2 marks

- 1 mark for providing a definition or explanation of coping flexibility
- 1 mark for explaining how Ariella would demonstrate coping flexibility

Question 2a.**Sample response**

The results show that the method of retrieval affected the average number of jokes that were correctly recalled. The most effective method was recognition, which was used by group 3 to recall an average of eight out of ten jokes. Recognition provides numerous cues to aid retrieval: in this case the original jokes mixed in among jokes not used in the comedy routine. The second most effective method was cued recall, which was used by group 2 to recall an average of five out of ten jokes. Being provided with the beginning of each joke would have acted as a retrieval cue, improving their recall ability. The least effective method was free recall, which was used by group 1 to recall an average of three out of ten jokes. Having no cues makes it difficult for participants to correctly recall the jokes.

Mark allocation: 4 marks

- 1 mark for stating an overall conclusion; for example, that the method of retrieval used affected the average number of jokes that could be correctly recalled
- 1 mark for identifying that group 3 (recognition) recalled the highest average number of jokes (eight out of ten) and explaining why
- 1 mark for identifying that group 2 (cued recall) recalled the second highest average number of jokes (five out of ten) and explaining why
- 1 mark for identifying that group 1 (free recall) recalled the lowest average number of jokes (three out of ten) and explaining why

Question 2b.**Sample response**

The serial position effect states that the immediate recall of items is best for items at the end of a list (recency effect), followed by items at the beginning of a list (primacy effect) and worst for items at the middle of a list. Therefore, the students will be most likely to recall the jokes from the end of the comedy routine, followed by the jokes from the start of the routine. They will have the most difficulty remembering the jokes from the middle of the routine.

Mark allocation: 3 marks

- 1 mark for stating that jokes told at the end of the routine would be recalled best (recency)
- 1 mark for stating that jokes told at the beginning of the routine would be the next best recalled (primacy)
- 1 mark for stating that jokes told in the middle of the routine would be the most difficult to recall

Question 2c.**Sample response**

A possible extraneous variable could be a participant difference, such as the participants' familiarity with the jokes told by the comedian. If a participant had heard them before, they may recall more of the jokes. This would make it difficult to determine if it was the method of retrieval (independent variable) or the participants' familiarity with the jokes that affected the average number of jokes recalled (dependent variable). This would lower the validity of Jemima's results.

Mark allocation: 3 marks

- 1 mark for identifying a plausible and relevant extraneous variable; for example:
 - individual participant differences such as familiarity with the jokes or the comedian
 - non-standardised procedures; if each condition/group was run on a different day or time of day
 - any other relevant extraneous variable
- 1 mark for explaining the impact of this extraneous variable on the results

Note: Students must state a directional impact on the operationalised dependent variable; for example, increasing or decreasing the average number of jokes correctly recalled.

- 1 mark for explaining the impact this would have on the validity of the results; that is, lowering the validity and making it unclear whether the independent variable (method of retrieval) caused any difference in the dependent variable (average number jokes correctly recalled)

Question 3a.**Sample response**

When Karl is in REM sleep the electrooculograph (EOG) would show high levels of electrical activity.

Mark allocation: 1 mark

- 1 mark for identifying that the EOG would show high levels of electrical activity

**Tip**

- *When asked to describe what an EOG, EEG or EMG recording would show, always refer to levels of electrical activity (rather than movement).*

Question 3b.**Sample response**

Shift work disorder is a type of circadian phase disorder as it results in sleep disruption due to a mismatch between a person's internal sleep-wake cycle and the external environment's day-night cycle. Karl works night shift therefore he needs to be awake and alert at a time when he would normally be sleeping. Shift work disorder is characterised by reduced total sleep time and excessive daytime sleepiness. This is seen in the sleep study as Karl recorded, on average, 5.2 hours of sleep each night which is lower than the average amount required for an adult (7 – 8 hours). In addition, Karl's average daytime sleepiness rating was 4.3 out of 5, which indicates high levels of daytime sleepiness.

Mark allocation: 3 marks

- 1 mark for explaining why Karl's shift work disorder is a type of circadian phase disorder, for example Karl needs to sleep during the day and this does not fit well with his external environment
- 1 mark for each piece of evidence to support Karl's diagnosis of shift work disorder (up to 2 marks); for example:
 - lowered total amount of sleep time – an average of 5.2 hours of sleep each night
 - excessive daytime sleepiness – a rating of 4.3 out of 5 for average daytime sleepiness
 - lowered sleep quality – a rating of 1.8 out of 5 for average sleep quality
 - trouble falling asleep – an average of 92.5 minutes taken to fall asleep each night

Question 3c.**Sample response**

Subjective measurements are collected through personal observations of behaviour. Karl was asked to record personal observations in his sleep diary. This included the quality of his sleep and the amount of daytime sleepiness he experienced. Sleep diaries are a limited measure because it is difficult to compare Karl's responses to those of other people, since his responses reflect only his own perspective and may be biased.

Mark allocation: 2 marks

- 1 mark for defining a subjective measurement
- 1 mark for explaining that a sleep diary is of limited use because is it subjective

Question 3d.**Sample response**

Karl may experience impaired memory ability as a result of his sleep deprivation. This could be dangerous as he may forget to give one of his patients the medication they require.

Mark allocation: 2 marks

- 1 mark for correctly identifying a psychological effect of sleep deprivation
- 1 mark for clearly linking this effect to Karl's job as a nurse and explaining why it could be harmful; for example:
 - impaired concentration – Karl's concentration/attention may be decreased, which could lead him to make mistakes with simple, monotonous tasks such as counting out medication and potentially cause him to give the wrong medication to patients
 - amplified emotional responses – Karl may become overly emotional when he realises one of his patients is going to die and this may make the situation more difficult for the patient
 - impaired higher-order thinking skills – Karl may have trouble making decisions or solving problems, causing him not to respond when a patient becomes unconscious

Note: Other examples may also be appropriate.

Question 3e.**Sample response**

Karl should use the bright light just before his shift starts or during his shift in the evening. This would signal his brain (specifically the suprachiasmatic nucleus) to delay the release of melatonin, a hormone that makes us drowsy. If the release of melatonin at night was prevented, then Karl would be more awake and alert during his night shift. As a result, Karl's melatonin would be released in the morning when he is home, which should make it easier for him to fall asleep and improve his sleep quantity and quality during the day.

Mark allocation: 3 marks

- 1 mark for correctly identifying that the bright light exposure should be used in the evening at the start of Karl's shift or during his shift
- 1 mark for explaining that this would delay the release of melatonin, a hormone associated with drowsiness, thereby shifting his sleep phase
- 1 mark for linking this to his daytime sleeping habits and explaining that melatonin would be released in the morning, which would make it easier for him to fall asleep and improve his sleep quantity and quality during the day

Question 4a.**Sample response**

One division of the nervous system that would be involved in David typing his essay is the central nervous system (CNS). The CNS, specifically the brain, would be responsible for processing information such as where he is going to put the quotes in his essay. The CNS would also formulate a motor response that can be sent to David's hand to type the quote. This would be carried via his spinal cord (part of the CNS) to the somatic nervous system (a subdivision of the peripheral nervous system). The motor message would then be received in muscles in David's hand and arm to enable him to type the quote.

Mark allocation: 5 marks

- 1 mark for correctly identifying a division or subdivision of the nervous system that would be involved in David's behaviour, for example, the CNS, the peripheral nervous system or the somatic nervous system (up to 2 marks)
- 1 mark for explaining how each division would be involved in David consciously writing his essay (up to 2 marks); for example:
 - the CNS would be involved in interpreting information that is written in the text, processing information within his essay or initiating a motor response to type something or highlight a quote
 - the peripheral nervous system would be involved in detecting and transmitting sensory information within David's body towards the spinal cord; for example, the feeling of the touchpad of his laptop on his fingertips
 - the somatic nervous system (a subdivision of the peripheral nervous system) would be involved in communicating motor responses from the CNS to David's muscles, such as his arm and hand muscles, to allow him to type on his laptop or flip a page in his text

Note: Other examples or functions may be suggested.

- 1 mark for explaining the interaction between the two divisions in the response

Note: A conscious response such as this would not involve the autonomic nervous system.

Question 4b.**Sample response**

One reason David's behaviour is conscious is that his responses are goal-directed, purposeful and intentional, while unconscious responses are reflexive and automatic. Additionally, writing an essay involves awareness and attention, whereas unconscious responses generally do not.

Mark allocation: 2 marks

- 1 mark for each reason why David's responses are conscious rather than unconscious when writing an essay. Each point must contrast conscious with unconscious (up to 2 marks); for example:
 - conscious responses, such as writing an essay, involve voluntary, goal-directed, purposeful or intentional responses, whereas unconscious responses are involuntary, unintentional, reflexive or automatic responses that are adaptive (increase one's chances of survival)
 - conscious responses tend to be more complex and can vary, while unconscious responses are simple and tend to occur in the same way each time they are performed
 - conscious responses may require learning, whereas unconscious responses do not require learning (they are innate)

Question 5a.**Sample response**

Type of consequence: response cost

Effect on future behaviour: This would reduce the likelihood of the child having temper tantrums by removing any positive attention the child might get.

Mark allocation: 2 marks

- 1 mark for correctly identifying the type of consequence as response cost
- 1 mark for explaining and applying the effect of this consequence on the future behaviour of the child

Question 5b.**Sample response**

Stimulus generalisation occurs when a voluntary response is made to a stimulus (antecedent) that is similar to the original stimulus that was present when the behaviour was reinforced. When starting to modify their child's temper tantrums, a parent would want to ensure that the child receives a timeout every time they have a tantrum (regardless of which situation it happens in), so that the child is able to create an association between any antecedent situation (e.g. saying no to a lolly at the supermarket) and the voluntary behaviour of throwing a tantrum, with the consequence of being sent into timeout.

Mark allocation: 2 marks

- 1 mark for defining and explaining stimulus generalisation
- 1 mark for applying this to the scenario of parents trying to modify their child's temper tantrums

Question 5c.**Sample response**

Motivation in observational learning involves the learner wanting to imitate or reproduce the desired behaviour. In this case, the behaviour is the child putting their dish away before being asked to do it. The likelihood of the child performing this behaviour will depend on whether the child believes that there will be a desirable consequence for their behaviour. By offering praise, as suggested in the article, the parent would increase the child's motivation to put their dish away because they will be anticipating this positive reinforcement. This will increase the likelihood of the child repeating the behaviour in the future.

Mark allocation: 3 marks

- 1 mark for explaining that motivation in observational learning involves the learner wanting to imitate or copy the desired behaviour
- 1 mark for explaining that the reinforcement will influence the likelihood of the child reproducing the behaviour by increasing their motivation to imitate it
- 1 mark for applying this to the scenario

Question 6a.**Sample response**

One full night of sleep deprivation (24 hours or more) is equivalent to a BAC of 0.10. Although Adam might not be drunk in the morning, he would be advised not to drive because he would be seven times more likely to have an accident. This is due to cognitive impairments that would occur while he was driving, such as forgetting road rules and having trouble making decisions.

Mark allocation: 2 marks

- 1 mark for correctly stating that one full night of sleep deprivation is equivalent to having a BAC of 0.10
- 1 mark for stating that Adam would have cognitive impairments such as:
 - trouble with problem-solving or making decisions
 - impaired memory
 - impaired logic and reasoning
 - impaired vision
 - any other valid impairment related to driving

**Tip**

- *Remember that a legal BAC of 0.05 is the same as 17 hours of sleep deprivation, and 24 hours of sleep deprivation is equivalent to a BAC of 0.10 (twice the legal limit).*

Question 6b.**Sample response**

Content limitations: Both Adam and Toby would have had less control over the content of their thoughts compared to when they are in normal waking consciousness. For example, while drunk they may have had more bizarre, illogical or disorganised thoughts than when they are sober.

Self-control: Both Adam and Toby may have had difficulty coordinating and controlling their body movements. For example, they may have had poor balance or more difficulty walking in a straight line when drunk than when they are sober.

Mark allocation: 4 marks

- 1 mark for correctly stating that their content limitations would be lowered, less controlled or less restricted than in normal waking consciousness
- 1 mark for relating lowered content limitations to examples associated with drinking, such as having illogical and disorganised thoughts
- 1 mark for correctly stating that they would have less self-control than they do in normal waking consciousness
- 1 mark for relating lower self-control to examples associated with drinking, such as:
 - difficulty coordinating and controlling body movements
 - difficulty showing restraint, lowered inhibitions, and being more likely to act emotionally or aggressively
 - being susceptible to suggestion, which can result in less inhibition
 - increased risk-taking behaviour

**Tip**

- *When comparing normal waking consciousness to an altered state of consciousness, it helps to provide specific examples to support your response. It is particularly helpful to learn some good examples that can be used in different scenarios, such as illogical or disorganised thoughts for content limitations and lack of coordination or lowered inhibitions for self-control.*

Question 7a.**Sample response**

May is likely to be suffering from a mental health problem. This is because she only shows minimal impairment in her level of functioning, such as feeling sad and not going out as much. If May had a mental disorder, she would show significant impairment in her level of functioning. May is showing only some distress and seems to be going through a rough patch, rather than the significant personal distress she would be suffering if she had a mental disorder.

Mark allocation: 3 marks

- 1 mark for correctly stating that May is suffering from a mental health problem
- 1 mark for each justification of this, using a characteristic of a mental health problem in relation to the scenario (up to 2 marks); for example:
 - May only shows some impairment of her level of functioning, such as feeling low and not socialising as much; if she had a mental disorder there would be a more significant impairment in her level of functioning
 - May is showing minimal distress but this distress would be more significant if she had a mental disorder
 - May has only been showing symptoms for a couple of weeks and it is directly in response to a stressor (her break-up), which is different from a mental disorder, which would be more long-term and doesn't always have a direct cause
 - any other valid comparative point

Question 7b.**Sample response**

Internal factor: substance use

External factor: social support

Mark allocation: 2 marks

- 1 mark for correctly identifying an internal biological or psychological factor
 - biological factors include genes, gender balances or imbalances in specific neurotransmitters, substance use, physiological responses to medication, brain and nervous system functioning, hormonal activities, fight-flight-freeze response, and other bodily responses to stress
 - psychological factors include cognition, beliefs and attitudes, our skills interacting with others, prior learning, perceptions of ourselves and others, how we understand and experience emotions, how we respond to and manage stress, how we reconstruct memories, and how we learn, make decisions and solve problems
- 1 mark for correctly identifying an external factor
 - external factors include school- and work-related factors, the quality of interpersonal relationships, the amount and type of support available from others when needed, exposure to stressors, level of education, employment history, level of income, housing situation, risks of violence, access to health care and other community resources, exposure to social stigma, and specific cultural influences such as our values and traditions

Question 7c.**Sample response**

Having a high level of resilience would improve May's ability to respond to, and overcome, stressors. This would help her to cope with the breakdown of her relationship, allowing her to bounce back and feel more positive about the situation. This can be seen as May continues to go to work and is able to socialise, rather than isolating herself and ruminating about the situation.

Mark allocation: 2 marks

- 1 mark for stating why a high level of resilience would be beneficial for May; for example, because it would improve her ability to cope with stressors and allow her to bounce back and restore positive functioning after setbacks
- 1 mark for referring to details of May's situation; for example, she is still going to work and socialising with friends, rather than isolating herself

Question 7d.**Sample response**

One reason is that walking her dog would release endorphins, improving her mood. Another reason is that walking would reduce muscle tension in her body, making her feel more relaxed.

Mark allocation: 2 marks

- 1 mark for each benefit of exercise for May's stress levels (up to 2 marks); for example, exercise
 - releases endorphins, improving her mood
 - reduces the level of stress hormones (e.g. cortisol and adrenaline) in her body, therefore improving her immune system functioning
 - provides a distraction or timeout from her breakup, therefore improving her mood
 - reduces muscle tension, therefore reducing May's autonomic (sympathetic) nervous system activation and lowering her arousal and stress levels
 - increases cardiovascular performance, strength and stamina, therefore improving May's ability to deal with future stressors

Question 8

Sample response

The total amount of time we spend sleeping decreases as we age. For example, the graph shows that neonates (newborns) spend around 16 hours sleeping each day, while adults 50 years and older sleep around 6 hours or less each night. The graph also shows a decrease across a person's lifespan in the proportion of time spent in REM sleep. This reduction in the proportion of REM sleep is particularly dramatic in the first few years of a child's life, then remains relatively stable through to a very old age.

The restoration theory of sleep suggests that the purpose of sleep is to provide us with time to recover from activities during waking time, which deplete our body's physical and mental resources. This theory proposes that REM sleep is important for restoring and repairing the mind and for helping the brain to develop, as well as promoting the maintenance of brain circuits and assisting in the consolidation of long-term memories. The theory also proposes that the brain's resources that have been used during the day are replenished, for example, neurotransmitters that are vital to neural transmission.

Infants and children learn rapidly as their brains develop; therefore, the theory suggests they need to spend a higher proportion of time in REM sleep, and they need more sleep in total to consolidate memories. In comparison, elderly adults do not need to spend as much time in REM sleep because they are not learning at a high rate and their brains are fully developed. The theory also suggests that the increase in brain activity during REM is linked to the preservation of important neural pathways.

The restoration theory also proposes that NREM sleep (when we experience our deepest sleep stages, particularly in NREM 3 and 4) is important for restoring the body. For example, it allows damaged cells to be repaired and muscles to detoxify and rid themselves of waste products. It also suggests that NREM sleep helps ward off illnesses and provides us with a period of physiological rest. The graph shows that as we age, NREM sleep decreases, particularly during adulthood and old age, which could be due to the fact that the body is no longer growing. Supportive evidence includes the fact that growth hormone (which also promotes body repair) is secreted at a much higher rate when we are asleep than when we are awake. Growth hormone secretion typically occurs during the first few hours of sleep, particularly during NREM deep sleep. Therefore, this would happen less in elderly people because they sleep less and have less NREM sleep overall. However, the restorative theory only provides a limited explanation of these changes across the lifespan. Research has not clearly determined that restoration is the only function of sleep. If restoration were the primary function of sleep, then we would expect that a person with a physical disability who was confined to a bed would sleep less than a physically active person, which is not the case.

In contrast, the evolutionary theory of sleep emphasises the vital connection between sleep and circadian rhythms, and why sleep has evolved to enhance our chances of survival. The theory suggests that sleep protects an organism by making it inactive during the part of the day when it is most at risk. It also proposes that synchronising an organism's circadian sleep-wake cycle with the day-night cycle of its environment helps ensure the organism's lifestyle and activities occur at the safest times. This would protect organisms from harm or death. The evolutionary theory suggests that the typical amount of an animal's sleep depends on how much time it needs to obtain food, how easily it can hide and how vulnerable it is to attack.

In relation to the graph, this could be used to explain why infants' total sleep time tends to be so long (16 hours); their food, or their mother's milk, is usually easily accessible, so they can afford to sleep longer than adults who need more time to find and prepare food. In addition,

infants are more vulnerable to attack than adults. Therefore, the evolutionary theory proposes that infants sleep more to avoid being attacked by predators or other threats.

The evolutionary theory is more limited in its explanation of changes in sleep patterns across the lifespan than the restoration theory, as it does not explain why we need to sleep and why our total amount of sleep changes across the lifespan. Additionally, the evolutionary theory does not account for the loss of awareness and alertness that occurs while we are sleeping, which places an organism at a greater risk. When asleep, especially during deep sleep, the organism is perceptually disengaged from its external environment and its muscles are in a relaxed state. Therefore, the organism would not be prepared to quickly respond to danger if a threat emerged.

Mark allocation: 10 marks

Note: This question would be marked globally using the following criteria.

Marks	Criteria
8–10 marks	<p>Students will provide a thorough and cohesive description of both the restorative and evolutionary theories of sleep. In addition, they will discuss and evaluate how each theory and its associated evidence could be used to explain key changes in sleep patterns across the lifespan.</p> <p>Students will identify and explain at least three key changes in sleep across the lifespan with direct reference to the graph, such as the following.</p> <ul style="list-style-type: none"> • The total amount of time spent sleeping decreases as we age (16 hours in infancy, down to 6 hours in late adulthood). • The proportion of time spent in REM sleep decreases markedly during the first two years and then remains relatively stable through to a very old age. • The proportion of time spent in NREM sleep decreases as we age, particularly during adulthood and old age. • Time spent in the deepest stages of sleep (NREM 3 and 4) decreases significantly during adulthood and old age (can't be seen directly in the graph). <p>Students will draw multiple links (three or four links across both theories) between changes over the lifespan evident in the graph and each theory's explanation of the purpose and function of sleep. Examples include:</p> <p>Restorative theory</p> <ul style="list-style-type: none"> • Infants' need for more REM sleep can be linked to them learning at a rapid rate and their brains developing. Elderly people are not learning as much and are not developing at a rapid rate, which can be linked to them not having as much REM sleep. • More NREM sleep in childhood and adolescence can be linked to growth and development because more growth hormone is released during deep NREM sleep during these developmental stages. <p>Evolutionary theory</p> <ul style="list-style-type: none"> • Infants sleeping 16 hours per day can be linked to the availability of food because their mother's milk is usually easily accessible. This means that infants can afford to sleep longer than adults who need more time to find and prepare the food they eat. • Infants are more vulnerable to attack than adults. Therefore, the evolutionary theory can be linked to infants sleeping more to avoid being attacked by predators or other threats. <p>Students will confidently use key terminology to explain each theory and evaluate its strengths and limitations. Student's responses will be written coherently and fluently.</p>

5–7 marks	<p>A lesser response will provide a description of both the restorative and evolutionary theories of sleep but it may lack some cohesion or detail, or may contain minor errors. In addition, it will discuss and evaluate how each theory (and its associated evidence) could be used to explain key changes in sleep patterns across the lifespan, but this may lack some cohesion or detail, or may contain minor errors.</p> <p>Students will identify and explain two or three key changes in sleep across the lifespan with direct reference to the graph. (For examples, refer to the 8–10 mark range description.)</p> <p>Students will draw some links (only two or three, but at least one for each theory) between changes over the lifespan evident in the graph and each theory’s explanation of the purpose and function of sleep. (For examples, refer to the 8–10 mark range description.)</p> <p>Students will use key terminology to explain each theory and evaluate its strengths and limitations. Student responses will be written coherently and fluently.</p>
4–5 marks	<p>Students will provide a description of one or both of the restorative and the evolutionary theories of sleep. In addition, they will discuss and evaluate how one or both theories (with limited supporting evidence) could be used to explain key changes in sleep patterns across the lifespan.</p> <p>Students will identify and explain at least one or two key changes in sleep across the lifespan, perhaps without direct reference to the graph. (For examples, refer to the 8–10 mark range description.)</p> <p>Students may draw some draw links (one or two, although they may only address one theory) between changes over the lifespan evident in the graph and the explanation associated with each or one theory of the purpose and function of sleep. (For examples, refer to the 8–10 mark range description.)</p> <p>Key terminology or key elements of each or one theory and its strengths and limitations will be missing. Student responses will be written coherently.</p>
2–3 marks	<p>Students will provide a limited description of either the restorative or the evolutionary theory. They may discuss or evaluate how this theory could be used to explain key changes in sleep patterns across the lifespan with minimal supporting evidence.</p> <p>Students may identify and explain one key change in sleep across the lifespan, perhaps without direct reference to the graph. (For examples, refer to the 8–10 mark range description.)</p> <p>Students may draw minimal links between changes over the lifespan evident in the graph and the theory they discuss.</p> <p>Key terminology and elements of the theory discussed will be missing. Student responses will lack depth or detail.</p>
1 mark	<p>Students may briefly describe one theory or identify a change in sleep patterns across the lifespan. (For examples, refer to the 8–10 mark range description.)</p> <p>Key terminology and elements of the theory will be missing. Student responses will lack depth or detail.</p>

END OF SAMPLE RESPONSES