

**2017****Units 3 & 4 PSYCHOLOGY****Trial examination****SOLUTIONS****SECTION A – Multiple-choice questions**

1	B
2	C
3	C
4	D
5	A
6	D
7	C
8	B
9	A
10	C
11	C
12	A
13	B
14	C
15	B
16	C
17	D

18	A
19	C
20	D
21	B
22	C
23	B
24	D
25	C
26	A
27	D
28	C
29	D
30	A
31	B
32	B
33	A
34	C

35	B
36	A
37	B
38	A
39	B
40	C
41	B
42	B
43	B
44	A
45	C
46	C
47	C
48	D
49	D
50	C

Question 1 B

The cerebellum is responsible for the formation of the motor skills such as the ability to shoot a layup in a basketball game.

The amygdala mediates the emotionality of a memory and plays a key role in fear conditioning. The hippocampus is involved in the consolidation of declarative memories. The hypothalamus is involved in fear responses, circadian rhythms and regulation of a variety of autonomic functions such as body temperature.

Question 2 C

The vesicles in the axon terminals stores neurotransmitters such as GABA.

The soma initiates an action potential, which then travels down the axon. The axon is surrounded and protected by the myelin sheath. The dendrites contain the receptor sites which are permeated by neurotransmitters such as GABA.

Question 3 C

The somatic nervous system is responsible for the initial detection of sensory information, in this case, the texture of the wood.

This information would be processed in the central nervous system; the autonomic nervous system is involved in some unconscious responses to sensory information e.g. adjusting pupil size in response to changing light conditions. The sympathetic nervous system is responsible for the stress response when the body is under threat.

Question 4 D

Anterograde amnesia is caused by damage to the hippocampus; it affects the ability to consolidate new explicit memories such as episodic and semantic memories. Other brain structures such as the cerebellum and the motor cortex are responsible for the formation of procedural memories and thus victims can typically still form new procedural memories if these structures remain intact.

Question 5 A

Dyssomnias are a group of sleep disorders that make it difficult to go to sleep or stay asleep such as insomnia.

Question 6 D

Pete's substance abuse is a precipitating risk factor as it has potentially contributed to the development and progression of his mental condition.

Whilst substance abuse can also be a perpetuating risk factor, both the scenario and the question itself allude to the fact that Pete is yet to seek any treatment for his condition. His substance abuse is yet to affect his recovery as he may discontinue this once he commences his treatment. A predisposing risk factor such as genetics would have also increased his susceptibility. A protective factor such as medication would prevent the reoccurrence of his mental disorder.

Question 7 C

In terms of the transtheoretical model of behavioural change, Pete is currently experiencing the contemplation stage as he gains awareness of his problem.

The precontemplation stage is indicative of an individual who fails to acknowledge that they have a mental health problem. The preparation stage occurs when the individual has made plans and has started taking small steps to behavioural change. Termination occurs when the individual has reached a point where they have no inkling to return to their previously maladaptive behaviour.

Question 8 B

When Pete reached the point of making plans and had taken the initial steps to making behavioural change he has reached the preparation stage of the transtheoretical model.

Note: He is yet to reach the action stage of the transtheoretical model as the scenario indicates that he is not devoted a sustained level of energy and commitment towards the necessary behavioural change required to deal with his condition.

Question 9 A

Stress is a state of psychological or physiological tension produced by internal or external forces that is classified as a psychological risk factor, which can contribute to a mental condition.

Poor sleep and substance abuse that can alter biochemical processes in the brain are classified as biological risk factors. Disorganised attachment is a result of unresolved childhood conflicts that results in difficulty forming meaningful and trusting relationships in adulthood and is classified as a social risk factor.

Question 10 C

Alzheimer's disease typically starts in the hippocampus (which explains the early symptoms of memory loss) before spreading to the frontal lobe and then progressively to other parts of the brain.

Question 11 C

An early symptom of Alzheimer's disease is anterograde amnesia, thus Harry will have difficulty forming new declarative memories.

His ability to recall implicit memories will be largely unaffected during the early stages of his conditions. Motor impairment such as tremors and a lack of control of facial expressions are symptoms of Parkinson's disease.

Question 12 A

Victims of Alzheimer's disease are most likely to experience low levels of acetylcholine, a neurotransmitter which plays a key role in memory.

Question 13 B

The autonomic nervous system is responsible for triggering changes in unconscious functions such as heart rate or pupil size in response to variations in environmental conditions and demands placed upon the body.

Question 14 C

A meditative state is a purposely induced altered state of consciousness that is achieved by sustaining focus on a single stimulus such as breathing in order to gain greater control over consciousness. It results in a reduced awareness of the external environment.

Sleep and daydreams are both naturally occurring altered states of consciousness and relaxing is a normal waking consciousness.

Question 15 B

When under the influence of a stimulant an EEG would typically report higher frequency beta brain waves, reflecting a relatively higher level of brain activity due to the stimulation (acceleration) of activity in the nervous system.

Question 16 C

The effects of legal blood alcohol content can often enhance mood as a person might experience a more relaxed state of mind. Given alcohol is a depressant that slows down central nervous system; it results in a slowing of brain wave activity and impairs cognition and concentration as a result.

Question 17 D

According to the restorative theory of sleep, deep sleep (both stages 3 and 4 of NREM sleep) plays a key role in recovery from sustained exertion. This is evidenced in studies that have indicated that endurance runners spend up to double their usual time in NREM stages 3 and 4 sleep after completion of an ultramarathon for a night or two.

Question 18 A

Children spend proportionally more time in deep sleep stages 3 & 4 NREM sleep. According to the restoration theory, deep sleep plays a major role in growth.

Question 19 C

Xander's body temperature would have temporarily fallen below its normal level when he was experiencing the 'shock' during the alarm stage as his body acted injured and was yet to deal with the stressor.

Question 20 D

After briefly going into shock, Xander's body will go into counter shock as his resistance to the stressor will first rise above his normal level of resistance. His fight-flight-freeze response will be activated and stress hormones such as adrenalin and cortisol will be released into the bloodstream which will increase his responsiveness to the stressor.

Question 21 B

Xander's parasympathetic nervous system will be activated during the resistance stage, by decreasing his heart rate and respiration rate as stress hormones remain at a high level and his body adapts to the prolonged stress, in this case dealing with the family's crisis.

Question 22 C

A strength of the GAS model is that the model highlights the relationship between prolonged stress and impairments in health.

Weaknesses of the model included the difficulty generalising the results of the testing of animals (rats) to humans in the development of the model. The model failed to cater for individual differences in terms of the variations in the manner in which humans respond to stress and the emphasis on the physiological processes rather than psychological processes involved in the appraisal of a stressor.

Question 23 B

STM has a capacity of 5 – 9 bits of information; sensory memory and LTM have an unlimited capacity.

Question 24 D

Adrenalin is a neurohormone that plays a key role in emotional arousal, fear and anxiety; it can be released into the bloodstream or into the brain via a presynaptic neuron.

Acetylcholine, dopamine and GABA are all neurotransmitters i.e. electrochemical messages that are transmitted from neuron to neuron via the synapse.

Question 25 C

Bright-light therapy would be an appropriate treatment to overcome circadian phase disorders such as the effects of shift work via exposure to a high intensity bright-light early in the evening. This sends light signals to the suprachiasmatic nucleus to assist the body with the timing of the release of melatonin by the pineal gland and thus help to reset the body clock.

Question 26 A

A disorganised attachment is categorised as a social contributing factor to the development of a mental disorder as a result of unresolved childhood conflicts that have affected a child's ability to form a trusting and meaningful relationship with others.

Question 27 D

Xavian's behaviour is being negatively reinforced by her father's behaviour of buying the ice-cream is being strengthened (reinforced) in order to remove the aversive (negative) stimulus of his daughter's tantrum.

Xavian on the other hand is being positively reinforced as she gains (positive) the stimulus of ice-cream which will, unfortunately for her father, increase (reinforce) her tantrum behaviour in order to get what she wants.

Question 28 C

An EEG that is used to record consciousness, it will record high frequency brain waves either during a normal consciousness e.g. when using selective attention or when experiencing an altered state of consciousness such as when under the influence of a stimulant.

Question 29 D

Difficulty concentrating is a cognitive symptom of sleep deprivation.

Irritability is an affective (emotional) symptom, whilst risk taking behaviour and diminished self-control are behavioural symptoms.

Question 30 A

The amygdala is the fear centre of the brain that would have been activated when Zach was experiencing a strong emotional response as a result of his belief that the bird was attacking him.

The hippocampus would have played a role in LTP (consolidating the memory) of the phobia.

Question 31 B

Operant conditioning is typically a perpetuating factor that contributes to the progression of a specific phobia e.g. as a child if Zach had a tantrum about going outside, his parents might have negatively reinforced the tantrum by allowing him to avoid outside activities thus strengthening his phobia of feathers in order to stop the tantrum which perpetuated his phobic condition.

Classical conditioning is typically a precipitating factor to the developing the phobia, a lack of GABA would have acted as a predisposing factor.

Question 32 B

Believing he was being attacked by the bird when he was a child was an unconditioned stimulus which reflexively triggered the unconditioned response of being terrified during the ordeal. In this case it was an unconditioned response as no learning (conditioning) was required in order to elicit a natural fear response (when he felt threatened).

Question 33 A

The sight of a feather is a conditioned stimulus as it would reflexively trigger a conditioned (fear) response as a result of his conditioning (the pairing of feathers and being attacked by the bird as a child).

Question 34 C

Zach may have a lack of GABA, which is a predisposing factor that may have contributed to his development of his phobic condition. Benzodiazepines can be used to treat Zach's condition. They have an agonistic effect by mimicking the effects of GABA on the post synaptic neuron and thus having a sedative/ relaxing effect on the body.

Question 35 B

STM has a duration of 12-30 seconds; maintenance rehearsal can be used to increase the duration of STM by repeatedly rehearsing stimuli either vocally or sub vocally without linking the material to existing material in the LTM. Thus it can be maintained in STM indefinitely as long as the individual is not distracted.

Question 36 A

Bright light therapy is a form of intervention that can be used to treat circadian phase disorders such as delayed sleep-wake phase disorder during adolescence. It involves exposure to a high intensity bright-light either first thing in the morning or in the evening which will help reset the body clock. It can either advance the circadian phase (makes it earlier) and thus the desired response is that the teenager feels alert earlier in the day or alternatively to delay sleep by sending light signals to the suprachiasmatic nucleus to trigger the release of melatonin by the pineal gland.

Question 37 B

In order for an ethics committee to grant approval to a researcher to use placebos in testing the effectiveness of medication on the treatment of a mental disorder, the researcher will need to inform the participants of the nature and purposes of the study, as well as their rights. In addition to this they will need to ensure that debriefing procedures are in place at the conclusion of the experiment. The use of deception will be required in order to determine the effectiveness of the medication in treating a mental condition, thus the participants would not be made aware of whether they are in the control or experimental group until the conclusion of the experiment.

Question 38 A

Long-term depression is a result of a weak low-frequency stimulation of the presynaptic axon-terminal which will weaken a synaptic pathway and thus have the opposite effect to long-term potentiation. Theoretically this will help clear the brain of disused memory pathways and the associated neural resources that can be utilised for future learning.

Question 39 B

A highly emotional event will trigger the release of a high amount of the neurohormone adrenaline which plays a key role in mediating the emotionality of an episodic memory and will thus strengthen the consolidation of the memory.

Question 40 C

Loss of employment is an example of a life event that is a source of stress.

Daily pressures are recurring e.g. marital difficulties, eustress is a positive psychological response to a stressor. Scott appears to be experiencing distress in this case.

Question 41` B

According to the Lazarus and Folkman Transactional model of stress and coping, during the primary appraisal process Scott would evaluate the significance of the stressor and thus evaluate the harm, threats and challenges of the termination of his contract. *The other three options occur after the initial evaluation.*

Question 42 B

The Lazarus and Folkman Transactional model of stress and coping, can best be described as a psychological model as it focuses on the transaction between people, their external environment and the interpretation that individuals make of a stressor.

Question 43 B

According to the mental health continuum, a person with mental health problems experiences mild to moderate stress that results in the experience of temporary impairment in their daily functioning.

A person that experiences occasional stress, but suffers no impairment in daily functioning would be classified as mentally healthy. Where as a person that experiences a disabling impairment in their daily functioning as a result of stress would be classified as experiencing a mental disorder.

Question 44 A

The sleep-wake is mainly regulated by biological factors, specifically the suprachiasmatic nucleus in the hypothalamus which acts like an internal body clock by regulating melatonin levels. Melatonin is a sleep inducing hormone.

Question 45 C

In contrast to a normal waking consciousness, a person dreaming during REM sleep will tend to experience reduced content limitations as their dreams may contain fantasy or bizarre episodes (not experienced during a normal waking consciousness).

Question 46 C

This research investigation used a repeated measures design. It exposed the 34 participants to both the control condition (pre-treatment) and the experimental treatment (10 weeks of breathing retraining). The use of volunteers from ten mental health clinics is a form of convenience sampling given not all members of the population of people suffering from a specific phobia had an equal chance of participating in the research.

Question 47 C

The independent variable in this case, was the use of breathing retraining for treating a specific phobia in order to test the effects of this form of treatment on treating a specific phobia (the dependent variable)

Question 48 D

The operationalised dependent variable in this case was the change in the extent of the participant's phobic response after the 10 week breathing retraining program (change in score out of 100)

An operationalised DV needs to specify how the DV will be measured in this scenario by the use of a pre and post test score out of 100 which can be compared to determine the change in response as a result of exposure to the IV.

Question 49 D

The research investigation used in this case was an experiment as it was used to determine a cause and effect relationship between variables under controlled conditions. It achieved this by manipulating an independent variable (the use of breathing retraining) to test its effect on the dependent variable (the extent of the patient's phobia)

Question 50 C

A person who experiences a high level of anxiety in response to their phobic stimulus tends to 'overbreathe'. Breathing retraining is used to help the patient slow their breathing to a more adaptive level and thus lower their anxiety.

SECTION B – short-answer questions**Question 1 (2 marks)**

Describe the role of dopamine in Parkinson's disease.

Degeneration of dopamine releasing neurons in the substantia nigra plays a major role in the development of Parkinson's disease.

- The dopamine neurotransmitters control messages to the striatum which is responsible for balance and posture.
- The lack of dopamine results in abnormal neuron functioning in the striatum and thus the motor cortex which is responsible for the initiation and coordination of voluntary movement receiving insufficient information which results in a loss of control of body movements.

1 mark for each dot point identified

Question 2 (4 marks)

Describe two differences between social learning theory and operant conditioning

- Social learning: the learning is indirect as the learner observes the behaviour and the consequences that are applied to the model; Operant conditioning: the learning is direct as the learner's behaviour is either strengthened or weakened as a result of the consequences (reinforcement or punishment) of behaviour performed.
- Social learning is a more cognitive process as the learner's behaviour is determined by an awareness of the modelled behaviour and future consequences. Operant condition is less of a cognitive process as the learner simply needs to note the consequences of their behaviour in order to determine the likelihood of it being repeated.
- Operant condition does not distinguish between acquisition of the learning and the performance of the behaviour; Observational does distinguish between the acquisition of the learning as a result of the observer paying attention and retaining the behaviour observed and the performance of the behaviour that might not appear immediately as observational learning focuses on the physical and mental ability of the learner to reproduce the behaviour (potentially in the future).

Question 3 (4 marks)

a. *Define resilience (in terms of mental health).*

Resilience is the ability to adapt to stress and adversity. Stress and adversity can stem from school, work, family, relationships, financial situations, health concerns, etc.

1 mark

b. *Identify a biological, psychological and social protective factor.*

Biological: Adequate diet, good sleep hygiene, maintaining good health & fitness, avoiding alcohol/drug use.

Psychological: cognitive behavioural strategies, awareness/ recognition of the disorder

Social: support from friends, family & the community.

3 marks

Question 4 (5 marks)

a. *Explain the purpose of sleep according to the evolutionary theory.*

- According to this theory the sleep wake-cycle has evolved around the circadian day, animal's sleep patterns tend to revolve around day-night cycles.
- Sleep requirements will vary across species of animals depending on the animal's food requirements, their vulnerability to predators and their need for energy consumption.

2 marks

b. *Identify two forms of evidence of the theory*

- Animals with high food requirements such as cows, giraffes, etc. need to graze for hours, tend to sleep less.
- Animals that are highly vulnerable to predators such as possums tend to sleep more than animals that are able to hide themselves from their predators, spend less time searching for food (the time they are the most vulnerable) and more time sleeping (they are less vulnerable when hidden).
- Larger animals that can't easily hide from predators sleep less e.g. deer so that they are more vigilant of predators.
- Hibernating animals that need to conserve energy when there are a lack of food sources will sleep for extended periods e.g. bears during the winter months.
- Humans sleep at night due to our visual limitations when there is an absence of light, thus reducing our risk of harm.

1 mark for any of the above points (a maximum of 2 marks)

2 marks

c. *Identify one limitation*

The loss of awareness of external stimuli when sleeping makes an animal highly vulnerable to predators when we are likely to respond to danger.

1 mark

Question 5 (3 marks)

a. *Describe a benefit of using an avoidance strategy.*

Avoidance strategies are a form of emotion-based coping that in the short-term at least will help Trish reduce the stress and emotions associated with her workplace demands.

1 mark

b. *Describe a limitation of using an avoidance strategy.*

By not dealing with the source of her work-related stressors, will inhibit her ability to develop more cognitive strategies for dealing with her work-related demands.

1 mark

c. Describe how Trish could use an approach strategy for dealing with her stress.

An approach strategy is more of a problem-based coping strategy that proactively deals with the source of the problem and thus will help to generate alternative solutions for dealing with her work-related stress.

1 mark

Question 6 (2 marks)

Describe how cumulative risk can affect an individual's mental health.

- Cumulative risk refers to the accumulation of risk factors that can either contribute to the development of, or exacerbate the severity of a mental condition.
- Exposure to risk factors can start early in life e.g. poverty, a troubled household, neglect, etc. can all increase the incidence of mental illness and have a more severe effect due to the accumulation of risk.

Question 7 (4 marks)

Using examples, distinguish between neurotransmitters that have an inhibitory effect versus an excitatory effect.

When the receptor binds with neurotransmitter there will be an inhibitory or excitatory effect.

- If the binding of a neurotransmitter has an excitatory effect, then the postsynaptic neuron is more likely to fire.
- E.g. glutamate has an excitatory effect on the postsynaptic neuron; it plays a key role in learning and memory.
- If the binding of a neurotransmitter has an inhibitory effect, then the postsynaptic neuron is less likely to fire.
- GABA has an inhibitory effect on the postsynaptic neuron; it has a calming effect on the brain.

1 mark for each of the two explanations, 1 mark for each example.

Question 8 (3 marks)

Explain the role of the central and peripheral nervous system in her spinal reflex.

- The peripheral nervous system is responsible for detecting the heat from the pole and conveying afferent signals towards the central nervous system.
- The afferent signal would be processed in the central nervous system in the spinal cord which would integrate the sensory signal with a motor signal, thus triggering the reflex response to arc back to the muscles in Vanessa's arm
- The peripheral nervous system would receive an efferent signal in the skeletal muscles in the arm, leading to the reflexive withdrawal of her arm.

Question 9 (3 marks)

What influence could a leading question have on the accuracy of her memory of the assault?

- Retrieving information from memory is a reconstructive process (thus memories need to be reconstructed when they are retrieved).
- Memory retrieval can be influenced by leading questions which suggests the answer or contains the information the examiner is looking.
- Misinformation from a leading question can become stored as part of an updated memory trace of the original event resulting in a potentially false and unreliable eyewitness testimony.

Question 10 (2 marks)

With the aid of examples, distinguish between a circadian rhythm and an ultradian rhythm

- A circadian rhythm refers to a biological process that occurs over a 24 hour cycle e.g. the regulation of the sleep-wake cycle.
- An ultradian rhythm is a biological process that is a recurrent period or cycle repeated throughout a 24-hour circadian day, e.g. NREM-REM sleep cycles.

Question 11 (2 marks)

Explain how LTP (long-term potentiation) has occurred in this case.

- LTP refers to the strengthening of synaptic connections between the presynaptic neuron & the postsynaptic neuron in this case for the memory trace of the new password on Jules's phone.
- The more a neural connection responsible for the memory of her password is activated, the more the pathway is strengthened. *(The pre and postsynaptic neurons communicate more easily, so in effect the postsynaptic neuron becomes more responsive to the presynaptic neuron through repeated stimulation – which in turn strengthens the memory circuit, making the memory more durable and easier to retrieve).*

1 mark for describing the strengthening of the memory pathway & 1 mark for a clear link to the scenario.

Question 12 (5 marks)

a. *Write a research hypothesis*

It is hypothesised that patients who are diagnosed with a phobic disorder and who consume a daily dose of Prosom will experience a greater reduction in severity of their symptoms than when consuming a daily dose of placebo (for the 6 week period).

(1 mark for the IV: Prosom vs. Placebos; 1 mark for the DV: reduction in the severity of symptoms, a 1 mark penalty if the response fails to include the population: patients diagnosed with a phobic disorder)

2 marks

b. *Describe the ethical implications in terms of informed consent for the use of a placebo treatment in Dr Zee's experiment.*

- The purpose of placebos in mental health experiments is to eliminate the placebo effect. In order to test the effectiveness (the dependent variable) of **a** medical form of treatment (the independent variable), the medication will need to be tested on the experimental group which involves the use of deception which could be argued is unethical.
- In order to satisfy the requirements of informed consent, the patients need to be informed of the purpose and nature of the research investigation, their rights and any risks involved. If the participants were not informed that for half of the experiment duration that they would be consuming placebos then it could be argued that this is a breach of informed consent.
- Alternatively, a patient might not be capable of providing informed consent e.g. if the extent of their mental illness has a significant effect on their cognition and decision making abilities.

3 marks

Question 13 (5 marks)

a. *In terms of both the primacy and recency effects justify any similarities or differences in the expected results from the two groups tested.*

- Primacy effect: Both groups would be expected to have a primary effect (*a superior recall of the earlier words on the list due to the additional attention and rehearsal that these words received*).
- Recency effect: Only the control group would be expected to have a recency effect
- The control group would have briefly retained the latter items in STM and thus recalled these items at the start of the recall phase of the test; however the interfering task (identifying prime numbers) would be expected to eliminate the recency effect for the experimental group due to the limitations of STM which can only hold a few items for up to 30 seconds without rehearsal.

3 marks

b. *Explain the benefit of calculating both of these statistics.*

- The mean provides a measure of central tendency which would provide a useful summary of the data particularly if the scores are clustered together.
- The standard deviation provides a measure of the spread of scores (variation) around a central point which is useful if there is a large range of scores.

2 marks

Question 14 (1 mark)

What role does myelin play in signal transmission?

The axon is protected & insulated by the **myelin sheath**; the myelin sheath enhances and speeds up the transmission of the neural messages.

Question 15 (2 marks)

Identify and describe two biological factors that could contribute to the development and progression of a mental disorder.

Genetic vulnerability to specific disorders:

Genetics can predispose individuals to a mental disorder as a result of excessive or low levels of a particular type of neurotransmitter or protein malfunction.

E.g. @ 1% of Australian's suffer from Schizophrenia. If both parents have Schizophrenia, then the incidence of Schizophrenia for their children rises to 45%.

Poor response to medication due to genetic factors:

Psychotropic medications (which are prescribed to treat mental illness) are generally prescribed with other treatments (Psychological and social).

Factors such as body weight, age, diet, race, metabolism, neural receptor sensitivity and gender can all affect an individual's responses to psychotropic medication for a mental disorder.

E.g. the presence of too much/too little of a neurotransmitter or the their receptors can trigger undesirable side effects or limit the effectiveness of the medication

solution continued next page

Poor sleep:

Sleep problems raise the risk of, and may directly contribute to a variety of mental disorders such as depression, anxiety, etc. highlighting the importance of sleep in emotional regulation and rational thinking in the brain.

E.g. Insomniacs are 10 times more likely to develop depression than the rest of the population

Substance use:

The use of alcohol, drugs and stimulants can contribute to the development of symptoms of a mental disorder in the short term and in some cases can alter the chemicals in the brain that regulate mood, thinking, etc.

These substances can interfere with the functionality of neurotransmitters or can reduce the amount of neurotransmitters released or have a blocking effect on receptor sites.

E.g. Regular cannabis use increases the risk of developing Psychotic symptoms to a 20% chance.

1 mark for identifying a biological factor along with a suitable explanation (if more than two factors are identified, then just assess the first two provided)

Question 16 (4 marks)

a. Define the fight-flight-freeze response

- The fight-flight-freeze response is an automatic response.
- It prepares an animal to either confront – OR flee a physically or psychological threatening situation OR to remain still and act injured.

2 marks

b. Identify one physiological change during Emily's freeze response that is distinctly different from a physiological change experienced when her body goes into 'fight' or 'flight' mode.

- Her body temperature will lower/her heart rate would also lower

1 mark

c. Why is Emily's freeze response potentially an 'adaptive response'?

- When Emily's freeze response was triggered, she may have appear injured (or dead) thus the dog may have left her alone, it also gave her a moment to assess the situation and decide how to respond i.e. whether to 'fight' or 'flight' the dog.

1 mark

Question 17 (7 marks)

a. Explain why caffeine is considered a stimulant.

Caffeine is a stimulant as it increases nervous system activity and thus increases arousal.

1 mark

b. Explain the effects of caffeine on alertness as measured by an EEG.

- The EEG will detect, amplify and record a higher level of electrical activity of the brain which indicates a higher level of alertness in comparison to ordinary wakefulness
- As reflected by higher frequency, lower amplitude beta brain waves.

2 marks

- c. *Using examples, distinguish between primary and secondary data relating to changes in alertness due to the effects of caffeine.*
- Primary data: is collected directly by Vern (the researcher) e.g. Vern may collect data via an EEG on participants when consuming caffeine and compare changes in the brain to the consumption of a caffeine placebo.
 - Secondary data is collected indirectly from an external source. e.g. Vern may obtain statistical information from past research reports on the effects of caffeine on alertness.
- 2 marks

- d. *Identify one advantage and one disadvantage of conducting an experiment on the effects of caffeine on alertness in comparison to other types of research investigations.*

Advantage

- The conditions of the experiment can be reported in a manner than can be easily replicated in order to enhance the reliability and validity of the results – or -
- By testing the effects of the manipulation of the IV on the DV, a cause and effect statement can be made about the relationship between two variables (caffeine consumption & changes in levels of alertness).

Disadvantage

There can be a degree of artificiality about testing in a laboratory setting e.g. the testing of emotions, anxiety, etc.

2 marks

Question 18 (2 marks)

In terms of methods of retrieval, explain why Sally is unable to name any of the “Australian’s of the Year” during the trivia competition.

- Sally is having difficulty recalling the names of recent Australians of the year
- She lacks the necessary cues required to activate the memory pathways in the brain (at the time of trivia competition)

1 mark for identifying ‘recall’ (the method of retrieval); 1 mark for describing the lack of cues as the cause of her retrieval failure.

Question 19 (10 marks)

Required

Analyse the findings of the Dr Pollocks investigation of the effectiveness of using CBT for treating insomnia of elderly patients. Support your analysis with reference to the following concepts

- *An explanation of insomnia*
- *A description of how CBT is used to treat insomnia*
- *An evaluation of the use of sleep diary as a method data collection*
- *A conclusion that could be drawn, based on the results of the experiment*

Sleep-onset insomnia: is a condition which results in an individual persistently having difficulty going to sleep at a usual time. The insomnia experiences a disruption to their sleep-wake cycle i.e. the timing of their sleep. The sleeper will often experience difficulty waking in the morning and go to sleep later than is required based on their requirements and demands of their lifestyle. Symptoms of insomnia include: It takes the sleeper more than 30 minutes to go to sleep (3 or more times per week for a period of 3+ months). The sleeper has poor quality sleep and reports not feeling well rested. The lack of sleep is impairing their cognitive, affective or behavioural functioning.

The use of CBT in treating insomnia.

CBT addresses the negative cycle of negative thoughts & emotions leading to poor sleep behaviour e.g. the use of alcohol or stimulants or not maintaining a consistent sleep-wake cycle.

It starts by identifying the negative thoughts (cognitions) and emotions about sleep via a questionnaire or sleep diary. These negative thoughts are typically a result of events from the past.

Then it attempts to challenge these negative thoughts (cognitions) and emotions about sleep and replace with more positive thoughts.

The patient is then taught more desirable sleep behaviours e.g. avoidance of bright lights late at night, avoiding stimulant use in the evening, etc. This will help the patient reduce the symptoms of insomnia.

The use of Cognitive Behavioural Therapy has a major advantage over medical treatments as it deals with the cause of the insomnia rather than just relieving the effects of sleep disturbances.

Sleep diaries

Requires participants to respond to questions or statements about their psychological experiences (thoughts, feelings & behaviours).

Typically the person over a 2 week period records - waking time, sleeping time, any night-time awakenings (+ time of awakening), a rating of quality of sleep, any naps or day-time activities e.g. exercise @ 8.30pm, a rating of their daytime alertness as well as dietary information such as alcohol use, caffeine consumption, medication + other relevant events such as study patterns.

The advantage of use of a sleep-diary as a method of data collection; it can provide rich detail about thoughts, feelings, behaviour in comparison to physiological measures such as an EEG.

A limitation of the use of a sleep diary as a method of data collection is that the accuracy and reliability of reporting can be limited due to subjectivity of recording process.

Analysis of results:

The use of the mean as a measure of central tendency for the three statistical reports does not determine the statistical significance of the results as the mean is merely a descriptive statistic which in this case summarises the data for the two groups of participants.

This limits the ability of Dr Pollocks to draw valid conclusions.

In terms of the sample tested, the group of participants who were exposed to CBT went to sleep significantly faster, slept for longer and a higher quality of sleep.

Marking Grid (see next page)

Very high (9-10 marks)	• a detailed explanation of insomnia & CBT • a detailed evaluation of the data collection • a detailed evaluation of the descriptive statistics
High (7-8 marks)	• a thorough explanation of insomnia & CBT • a thorough evaluation of the data collection • a thorough evaluation of the descriptive statistics
Medium (5-6 marks)	• a moderate level of explanation of insomnia & CBT • a moderate level of evaluation of the data collection • a moderate level of evaluation of the descriptive statistics
Low (3-4 marks)	• a limited explanation of insomnia & CBT • a limited evaluation of the data collection • a limited evaluation of the descriptive statistics
Very low (0-2 marks)	• a limited if any explanation of insomnia & CBT • a limited if any evaluation of the data collection • a limited if any evaluation of the descriptive statistics