SECTION A: MULTIPLE-CHOICE QUESTIONS

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

16. A  B  C  D  
17. A  B  C  D  
18. A  B  C  D  
19. A  B  C  D  
20. A  B  C  D  
21. A  B  C  D  
22. A  B  C  D  
23. A  B  C  D  
24. A  B  C  D  
25. A  B  C  D  
26. A  B  C  D  
27. A  B  C  D  
28. A  B  C  D  
29. A  B  C  D  
30. A  B  C  D  

31. A  B  C  D  
32. A  B  C  D  
33. A  B  C  D  
34. A  B  C  D  
35. A  B  C  D  
36. A  B  C  D  
37. A  B  C  D  
38. A  B  C  D  
39. A  B  C  D  
40. A  B  C  D  
41. A  B  C  D  
42. A  B  C  D  
43. A  B  C  D  
44. A  B  C  D  
45. A  B  C  D
Question 1  C
According to Descartes the pineal gland connects the mind and body, which therefore makes this brain structure the centre of consciousness.

Question 2  A
Reading a word or identifying a colour (from a word) are generally simple tasks that require minimal attention thus involve automatic processing. This can at times cause perceptual errors when information is incongruent as is the case when asked to identify the colour of a word that is different to the printed word colour.

Question 3  D
Meditation is an altered state of consciousness (ASC) which can be used to gain greater control over causes of pain. An alcohol induced state (also an ASC) can result in reduced self-control e.g. in our behaviour.

Question 4  C
Relaxation is a normal waking consciousness in which the person benefits from reduced stress and reduction in physiological processes associated with stress. The other three alternatives are all examples of altered states of consciousness.

Question 5  D
An EOG would indicate a higher level of electrical activity of the eye muscles that control eye movements during REM sleep due to rapid eye movement during dreams. During NREM sleep there are slow rolling eye movements signified by reduced levels of electrical activity of the eye muscles that control eye movements.

Question 6  C
Delta brain waves appear in stages 3 and 4 of NREM sleep, known as slow wave sleep. EEG patterns show high amplitude (up to 5 times higher than stage 2 NREM), low frequency (0.5 to 4 per section) brain waves.

Question 7  B
The effects of both total and partial sleep deprivation are generally temporary and Jo and Kevin should fully recover once they are back into their normal sleep patterns.

Question 8  C
Jo has experienced total sleep deprivation, whereas Kevin has partial sleep deprivation. Both will experience REM rebound which will result in them obtaining up to double the amount of REM to compensate for loss of REM during the previous three nights.

Question 9  B
According to the restoration theory, slow wave sleep (stages 3 and 4 of NREM sleep) is believed to assist with recovery from fatigue – it detoxifies the muscles of waste products (lactic acid). Quadriplegics have similar proportions of slow wave sleep to able bodied people, despite their limited strenuous activity.

Question 10  A
During adolescence, a teenager’s biological clock moves forward by 1–2 hours, making it more difficult to go to sleep early.
Question 11  D
Melatonin is a naturally occurring hormone that induces sleep and can be prescribed to adolescents as a last resort to overcome delayed sleep onset disorder. The doctor prior to this stage may have suggested establishing better sleep habits, avoiding late night study etc.

Question 12  B
The prefrontal cortex (frontal lobe) is responsible for attention as well as the executive function, for example, planning, decision making.

Question 13  C
The somatic nervous system has a sensory function, which is responsible for transmission of the sensory information in terms of the texture of the sculpture to the spinal cord, resulting in sensory neurons conveying this information to the somatosensory cortex for processing.

Question 14  B
Alzheimer’s disease is the most common form of dementia in Australia (50% – 70% of dementia cases) that is characterised by a gradual degeneration of brain cells.

Question 15  D
A SPECT scan provides both structural and functional information about the brain when completing a cognitive task, thus indicating areas that have reduced activity (in comparisons to baseline neural activity for a healthy adult brain).

Question 16  A
Acetylcholine is a neurotransmitter that is involved in long-term potentiation (memory formation) as well as responsiveness to sensory input which influences attention and decision making. Alzheimer’s victims have been found to have suffered up to a 90% reduction in acetylcholine which results in short-term memory impairment and can cause confusion and other cognitive decline.

Question 17  A
The thalamus relays sensory input to the cerebral cortex as well as regulating our consciousness. Damage to this brain structure has been known to cause synesthesia which is characterised by a blending of the senses, for example, people might smell a particular food when they hear a certain sound.

Question 18  C
Change blindness occurs when there are changes to visual scenes (during a disruption such as an eye saccade) that are either expected or unexpected. Either way it occurs, we fail to store the visual information in the first place or fail to compare a visual stimulus before and after a change in a visual scene.

Question 19  C
The patient can verbalise that it is a dog, given that the information would be processed in both cerebral hemispheres due to the use of the left eye. Thus information from the left side of the retina in the left eye would be processed in the left verbal hemisphere for verbal processing.
Question 20  C
Both the SPECT and PET scans use a radioactive tracer in the bloodstream (the SPECT tracer is longer lasting). The PET scan provides more detailed images. When a SPECT is used, it is often used in conjunction with a CT scan.

Question 21  C
Sandy could give students a cue such as the first letter of each city, which will assist the students in the activation of their semantic memory to locate the name of each city associated with the South American country.

Question 22  B
Various non-verbal sounds are processed by both the left and right auditory cortex. The right auditory cortex is dominant in detecting changes in pitch, but neuroimaging studies indicate that the left auditory cortex does play a role.

Question 23  A
A TMS uses an electromagnetic coil to induce weak electric currents which result in brain activity. This causes depolarisation of neurons in the brain which creates activity and enabled Leigh’s functionality and interconnections to be studied.

Question 24  D
Long-term potentiation refers to the strengthening of a connection between two neurons, meaning that they fire together thus forming the basis of memory.

Question 25  C
The amygdala plays a large role in the formation and storage of memories associated with emotional events, as well as learning and fear processing.

Question 26  A
The hippocampus is responsible for both the formation and consolidation of explicit (declarative) memories, thus damage to this brain structure is the cause of Lisa’s difficulty retrieving these types of memories.

Question 27  B
Uncle Arthur’s recall would be expected to decline the most; recognition doesn’t tend to decline with age.

Question 28  B
Iconic memory (visual sensory memory) has an unlimited capacity with a duration of approximately a third of a second. This explains why John briefly experienced an after image when suddenly changing his visual field.

Question 29  C
Group A’s learning of Soccer World Cup host cities has retroactively interfered with the retrieval of the earlier learned Summer Olympic host cities as reflected by Group Z’s higher score achieved on recall of Summer Olympic host cities than Group A.
Question 30  D
Group A's initial learning of Soccer World Cup host cities has interfered with the retrieval of Summer Olympic host cities as reflected by Group A achieving a higher score on recall of Summer Olympic host cities than Group Z.

Question 31  B
The mean is a measure of central tendency which is a descriptive statistic that merely provides a summary of the data.

Question 32  D
The participants’ pre-existing knowledge of host cities is a potential confounding variable (that is, a variable other than the independent variable) that could affect the dependent variable.

Question 33  C
According to Freud, motivated forgetting involves the blocking of painful memories from conscious awareness which is either done unconsciously (repression) or consciously (suppression).

Question 34  C
According to the decay theory of forgetting, memories when not regularly activated will gradually fade. Consequently, these memories cannot be retrieved due to the absence of a memory trace at the time of retrieval.

Question 35  A
Episodic memories are personal memories that relate to time and place that need to be consciously brought to mind to be retrieved, for example, location of a regular seat in a university lecture theatre.

Question 36  C
According to the semantic network theory, information in long-term memory is organised in an overlapping network of concepts which are known as nodes.

Question 37  B
Animals such as rats are often used in behavioural experiments as they typically have a shorter lifespan than humans (for example, a rat’s lifespan is approximately two years), thus enabling a longitudinal study to be done over an animal’s lifespan.

Question 38  A
Construct validity refers to whether an assessment tool used in psychological research measures the behaviour it is supposed to. Internal validity: refers to the design of the research in terms of how well it measures what it is supposed to measure. External validity: refers to how well the research findings can be generalised to the wider population.

Question 39  C
The rate of forgetting would be the same, regardless of how well practised or learned the material is. Thus the use of maintenance rehearsal (by Simon) and elaborative rehearsal (by Garfunkel) will have no bearing on the rate of forgetting.
Question 40  A
The use of ‘COWS’ in this case is an acronym which is a mnemonic technique used to create a pronounceable word using the first letters of a sequence of words, in order to enhance memory.

Question 41  A
According to the research conducted by Loftus, the use of violent words such as ‘smash’ had a significant impact on the witness’s estimation of the speed that the car was travelling at the time of the collision.

Question 42  B
The variations in estimations of the speed in which the car was travelling was theorised by Loftus to be attributable to the belief that subjects had about experimental expectations, which was due to the choice of words used to describe the collision.

Question 43  B
Goodin et al (1969) found that when subjects hid items when intoxicated, they were more likely to recall where these items were hidden when they were dunk again due to state dependent cues.

Question 44  B
Narrative chaining involves memorising a sequence of words by creating a bizarre or meaningful story in order to enhance the manner in which it is organised in memory, thus aiding its consequential retrieval when required.

Question 45  C
A p value of 0.02 means that there is a 2% probability that the results are due to chance, which is a significant result, thus the hypothesis is supported.
SECTION B – SHORT-ANSWER QUESTIONS

Question 1
William James likened our consciousness to the ebbing and flowing of a stream because it never stops and it can move in different directions.

He described consciousness as continuous (does not cease even when asleep), personal (unique to the individual), changing (thoughts and perceptions change from internal to external etc.) and selective (we choose to attend to external stimuli – for example, a conversation – then to internal, such as deciding what to do next).

2 marks
1 mark for each point

The second point must have at least two of the italic descriptors.

Question 2
• Reduced self control, for example reduced coordination or erratic behaviour.
• Perceptual distortions, for example reduced ability to make sense of sensory input such as a conversation.
• Cognitive distortions – thoughts may become disorganised, for example, memory impairment.
• Emotional awareness – emotions may become disconnected.
• Time distortions – the person may lose track of time.

2 marks
1 mark for any two of the above points

Question 3
Video monitoring uses infrared cameras to monitor a sleeper’s movements during sleep. This information can be compared to various physiological measures and provide a sleep clinician with information in regards to a sleep disorder that a patient may suffer from.

1 mark

Question 4
a. An aphasic is someone who has language impairment as a result of a brain injury. In Bill’s case:
• He may have difficulty with understanding others.
• His speech may be fluent but may be incomprehensible to others.
• He has difficulty selecting the right word from memory when speaking.
• His speech may lack content words.

2 marks
1 mark for any two of the above points

b. Ben could be one of 5% of the population who have their speech areas located in their right hemisphere, thus the speech areas of his brain are unaffected by the injury.

1 mark

Question 5
a. The reticular activating system is comprised of several neuronal circuits that connect the brain stem to the cerebral cortex.

1 mark

b. During sleep, neurons in the reticular activating system (RAS) will have a much lower firing rate (they are less active). In order that the brain may sleep, there must be a reduction in ascending afferent activity reaching the cortex by suppression of the RAS.

1 mark
**Question 6**
Consolidation of declarative memories (strengthening of neural circuits involved in learning and memory) helps restore our mental well-being. 1 mark

**Question 7**
a. When visual information is flashed to the left visual field, it is processed in the right (non verbal) hemisphere. Due to the severing of her corpus callosum, the information cannot be transferred to her left verbal hemisphere for verbalisation. 1 mark

b. Amy can draw the object with her left hand as it is controlled by her right hemisphere (where the visual information has been processed). 1 mark

**Question 8**
- The motion after-effect is a perceptual anomaly that occurs after staring at a moving image for a period of time, then looking at a stationary image. The stationary image appears to move in the opposite direction to the moving image.
- Exner proposed that specific cells in our visual cortex detect movement. Pairs of neurons detect opposite directions. One neuron of the pair becomes fatigued (if viewing a moving stimulus that travels in the same direction for an extended period of time), while the other neuron of the pair (which is sensitive to the movement in the opposite direction) produces its normal activity, thus causing an imbalance between the pairs of neurons and the consequent motion after-effect. 2 marks

*Note: alternative explanations are too numerous to list, thus 1 mark is allocated for an explanation of the concept (first dot point) with an additional mark allocated for any suitable explanation.*

**Question 9**
The MRI uses magnetic fields and radio waves to vibrate atoms in the brain detected by a magnetic chamber, images then processed by a computer. The computer can process this information and create a 3D coloured representation of the brain. 1 mark

**Question 10**
According to the consolidation theory, in order for memories to be transferred from STM to LTM, there needs to be a period of time (a minimum of 30 minutes) for the memory trace to be fortified (consolidated). Blake’s injury has interrupted the consolidation process, thus the memory trace has not formed. 1 mark

**Question 11**
Joe’s memory of the initial Nobel Peace Prize winners is an example of a primacy effect – these items have been rehearsed more, thus these names have been transferred to long-term memory. 1 mark
Question 12
Jill might incorporate a PowerPoint slideshow in a Psychology lecture – the phonological loop sub-vocally rehearsing the next part of the presentation. 1 mark
The visuo-spatial sketchpad visualises the next visual image to be displayed. 1 mark
The central executive directs the episodic buffer to combine the verbal part of the presentation (from the phonological loop) with the visual part of the slides (visuo-spatial sketchpad). 1 mark

Question 13
Shani has only attended to structural properties of the logo, that is how the logo looks, e.g. upper case letters, lower case letters. This form of shallow processing generally results in the lowest form of recall for levels of processing. 1 mark
Danni has encoded the logo phonemically, that is according to sound; by subvocalising the logo, she may have even associated the logo with a musical tune to assist her to encode it. This form of intermediate processing generally results in a higher rate of recall than shallow (structural processing). 1 mark

Question 14
Retrieval failure is an inability to recall information due to the absence of the right cue. 1 mark
In this case Lily lacks the necessary cues to remember her friend’s name which could be due to seeing her friend in a different context (other than the classroom). 1 mark

Question 15
The peg-word method involves the use of ‘pegs’ to visually hook or ‘hang’ information on. The hook (peg) acts as a cue to aid retrieval.
Step 1: Lee could memorise key words that can be associated with numbers (one-bun, two-shoe, three-tree, four-door, five-hive).
Step 2: Lee could create an image of the items you need to remember with key words. For example, a bun with salami on it, a shoe with a tongue on it, a tree with a single leaf on it, a car door that is open, a bee hive with a pencil stuck in an opening. 3 marks
All five words must be used for full marks

SECTION C – EXTENDED ANSWER QUESTION
Introduction
Possible Hypothesis: 65 to 80 year olds who are mentally active are more likely to have a slower rate of forgetting – as operationalised by the amount of forgetting on a list of 30 nonsense syllables after 1 hour, 1 day, 1 week and 1 month – than 65 to 80 year olds who are physically active.
IV: being mentally active versus physically active.
DV: rate of forgetting, operationalised by the amount of forgetting on a list of 30 nonsense syllables after 1 hour, 1 day, 1 week and 1 month.
Discussion
Conclusion: That the hypothesis is partially supported; mentally active 65 to 80 year olds initially (after 1 minute and 1 hour) have a slower rate of decline for information learned. But for the longer term (after 1 day and after 1 month), there was no significant difference in the rate of forgetting for mentally active versus physically active 65 to 80 year olds (observed differences were due to chance).
Weaknesses
The use of an independent groups research design meant that there were participant related variables, such as memory ability of participants and age of participants (one group could have had more participants closer to 80 years of age than the other group who had more participants closer to 65). This could have been eliminated by the use of a matched pairs research design, in which the participants could have been matched on memory, ability and age.

Demand characteristics could have influenced results – the physically active group may have had different expectations than the mentally active group which could have influenced results on memory tests (a placebo effect). To control this, subjects could have simply been told to keep a record of both their physical and mental activity and then to test their rate of forgetting, without informing them of any groupings or experimental aims.

Implications
The findings cannot be generalised to the wider population due to the influence of participant related differences and demand characteristics.

Marking guidelines
9–10 marks
• Introduction: Hypothesis contains correctly operationalised IV and DV as well as population.
• Discussion: Conclusion is appropriate and states (partial) acceptance or rejection of hypothesis.
• Weakness(es) of design are correctly identified and appropriate procedures to overcome weaknesses of design are described.
• Implications of conclusion are correct.

7–8 marks
• Effective application and use of report writing conventions.
• Effective use of psychological terminology in construction of hypothesis, discussion of conclusions, experimental design weaknesses and implications of conclusions.

5–6 marks
• Some application and use of report writing conventions.
• Some use of psychological terminology in construction of hypothesis, discussion of conclusions, experimental design weaknesses and implications of conclusions.

3–4 marks
• Limited application and use of report writing conventions.
• Limited use of psychological terminology in construction of hypothesis, discussion of conclusions, experimental design weaknesses and implications of conclusions.

0–2 marks
• Very limited application and use of report writing conventions.
• Very limited use of psychological terminology in construction of hypothesis, discussion of conclusions, experimental design weaknesses and implications of conclusions.