



Victorian Certificate of Education 2012

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STUDENT NUMBER

Letter

Figures

Words

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PSYCHOLOGY Written examination 1

Wednesday 13 June 2012

Reading time: 9.00 am to 9.15 am (15 minutes)

Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of marks
A	45	45	45
B	11	11	35
C	1	1	10
			Total 90

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials supplied

- Question and answer book of 25 pages.
- Answer sheet for multiple-choice questions.
- Additional space is available at the end of the book if you need extra paper to complete an answer.

Instructions

- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be in English.

At the end of the examination

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A – Multiple-choice questions**Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Question 1

William James' and René Descartes' views of consciousness, respectively, were that

- A. the mind is located in many organs of the body; the mind and body are not separate entities.
- B. the body is another expression of the soul; the mind can control the body but the body cannot control the mind.
- C. the mind is totally distinct from the body; the body can control the mind but the mind cannot control the body.
- D. the mind is a stream of consciousness; the body and mind are separate entities and are linked to each other via the brain.

Use the following information to answer Questions 2 and 3.

Roy was in a room learning words for a play in which he was to perform. While he was learning the words, a clock was ticking noisily in the room. However, Roy was able to focus and concentrate on learning his words without being distracted by the sound of the clock.

Question 2

In terms of levels of awareness, Roy's ability to focus on learning the words of the play is best explained as

- A. a controlled process that involves mental effort.
- B. an automatic process that involves mental effort.
- C. an automatic process that involves minimal awareness.
- D. a controlled process that involves minimal awareness.

Question 3

During the time when he was learning the words of the play, it would be expected that Roy's thalamus

- A. processed all the sensory information and was not highly activated.
- B. processed all the sensory information and was highly activated.
- C. directed his attention simultaneously towards learning the words and the sound of the clock ticking.
- D. directed his attention towards learning the words while simultaneously filtering out the sound of the clock ticking.

Question 4

Maggie and Tom are two healthy 15-year-old high school students who participated in a sleep study. During the study, they had to record their respective number of hours of sleep. They submitted their sleep records to the researchers at the end of the study.

The type of data collected in Maggie's and Tom's sleep records was

- A. qualitative only.
- B. quantitative only.
- C. counter balancing.
- D. both qualitative and quantitative.

Question 5

Research into human cognitive functioning suggests that information presented to the

- A. right visual field is received by the right eye only and processed in the left hemisphere.
- B. left visual field is received by the left eye only and processed in the right hemisphere.
- C. right visual field is processed in the left hemisphere.
- D. left visual field is processed in the left hemisphere.

Use the following information to answer Questions 6 and 7.

A researcher studied the effects of sleep deprivation on healthy adult participants. Each night, over a period of seven nights, participants were permitted to fall asleep naturally. The participants were then briefly woken by the researcher every 60 minutes. Each time they were woken, they were allowed to go straight back to sleep.

This procedure was followed for the eight hours that the participants were allowed to sleep each night of the study.

Question 6

On the day after the seventh night of the study, the participants would be likely to experience

- A. delusions.
- B. unintelligible speech.
- C. slower physical reactions.
- D. significant and dramatic mood changes.

Question 7

On the day **after** the seventh night of the study, the participants were required to complete a short set of simple tasks and a short set of complex tasks.

Which one of the following statements would describe the most likely findings of the study?

Participants performed

- A. well on both the simple tasks and the complex tasks. They made few errors on both tasks.
- B. poorly on both the simple tasks and the complex tasks. They made many errors on both tasks.
- C. poorly on the simple tasks and made many errors. They performed well on the complex tasks and made few errors.
- D. poorly on the complex tasks and made many errors. They performed well on the simple tasks and made few errors.

Question 8

Due to copyright restriction,
this material is not supplied.

Source: *A manual of standardised terminology, techniques and scoring system for sleep stages of human sleep*, Rechtschaffen and Kales, 1968

The above diagram shows an electroencephalograph (EEG) and an electrooculargraph (EOG) of the recorded patterns in the stages of a typical night's sleep for a healthy adult.

The brainwave that is circled in this diagram is called a

- A. hypnic jerk, which typically occurs in response to muscle relaxation.
- B. K-complex, which typically occurs in response to intense external stimuli.
- C. sleep spindle, which typically occurs in response to intense internal stimuli.
- D. delta wave, which typically occurs in response to a decreased rate of breathing.

Question 9

In an EEG recording, deep sleep is indicated by

- A. beta waves.
- B. theta waves.
- C. alpha and theta waves.
- D. theta and delta waves.

Question 10

As a person progresses through the stages of sleep to Stage 4

- A. EOG recordings indicate an increase in muscle movement.
- B. EOG recordings indicate an increase in rapid eye movement.
- C. EEG recordings decrease in amplitude and increase in frequency.
- D. EEG recordings increase in amplitude and decrease in frequency.

Question 11

During Stage 4 deep sleep, a

- A. computed tomography (CT) scan would indicate low activation in the neurons of the primary visual cortex.
- B. magnetic resonance imaging (MRI) scan would indicate high activation in the neurons of the primary motor cortex.
- C. positron emission tomography (PET) scan would indicate high activation in the neurons of the reticular activating system.
- D. functional magnetic resonance imaging (fMRI) scan would indicate low activation in the neurons of the reticular activating system.

Question 12

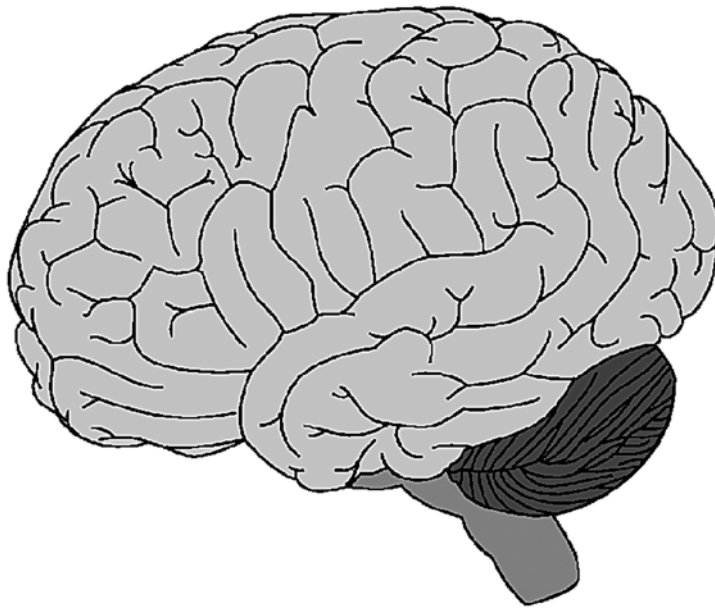
During sleep, the reticular activating system plays a major role in

- A. problem solving, planning and language.
- B. controlling the transition from deep sleep to wakefulness.
- C. the consolidation of memories from short-term to long-term memory.
- D. coordinating neural information from Broca's area to the motor neurons that control the lips and the tongue.

Question 13

Agatha is reading a book. The visual sensory information from the book is directed to her primary visual cortex by

- A. her thalamus.
- B. her reticular activating system.
- C. her primary somatosensory cortex.
- D. her association area of the parietal lobe.

Question 14

In a typical human brain, the hemisphere shown in the diagram above would mostly be responsible for

- A. movements on the right side of the body, language, and problem solving.
- B. processing sensations from the left side of the body, processing sounds from the left ear, and language.
- C. processing sensations from the right side of the body, spatial reasoning, and art appreciation.
- D. processing sensations from the left side of the body, movements on the left side of the body, and spatial reasoning.

Use the following information to answer Questions 15–17.

Sperry and Gazzaniga carried out a number of studies that examined hemispheric specialisation. They used split-brain patients. Some of the procedures and results from two of these studies are summarised in the table below.

Study number	Details	Results of study
1	Patients were required to focus on a central fixation point on a screen. Two different words were presented simultaneously on the screen, one to the left of the fixation point and one to the right of the fixation point.	Patients were only able to read and say the words that were presented to the right of the fixation point.
2	Patients were required to focus on a central fixation point on a screen. Under the screen there was a selection of objects. Patients were presented with a picture of one of these objects on the screen to either the left or right of the fixation point. Patients were asked to reach under the screen and identify the pictured object by touching it.	- Patients were unable to name an object that was presented to the left of the fixation point but could identify the object with their left hands by touching it. - Patients were able to name objects that were presented to the right of the fixation point. - Patients often denied seeing anything at all when the object was presented to the left of the fixation point.

Question 15

The results of study number 1 suggest that

- A. objects in the right visual field are processed by the right hemisphere.
- B. the left hemisphere can process words and can also enable words to be verbalised.
- C. the left hemisphere can process words but does not enable words to be verbalised.
- D. the right hemisphere is unable to process words when words are presented to both visual fields.

Question 16

The results of study number 2 suggest that

- A. the left hemisphere is responsible for coordinating movements in the left hand.
- B. the right hemisphere can identify the pictured object but the object cannot be named.
- C. only objects in the right visual field are received and processed by the primary visual cortex.
- D. the left and right hemispheres can both name and identify objects by touch.

Question 17

The results of these two studies together suggest that the

- A. right hemisphere is responsible for verbalising objects and words.
- B. left hemisphere is responsible for identifying objects with the left hand.
- C. left hemisphere is responsible for spatial reasoning and identifying objects.
- D. left hemisphere appears to make the executive decisions about whether or not an item is present.

Question 18

Which of the following best describes the sequential stages of the formation of new memory according to the Atkinson–Shiffrin multi-store model of memory?

- A. sensory memory, short-term memory, long-term memory
- B. long-term memory, sensory memory, short-term memory
- C. short-term memory, long-term memory, sensory memory
- D. sensory memory, long-term memory, short-term memory

Use the following information to answer Questions 19 and 20.

The table below shows physiological responses in two different situations.

Situation number	Situation description	Physiological responses
1	Watching a frightening movie	• Pupils dilate • Heart rate accelerates
2	Sitting at home reading a gardening magazine	• Stomach and pancreas are stimulated • Salivary glands secrete saliva

Question 19

While watching a frightening movie it is **also** likely that

- A. breathing rate increases and the bladder relaxes.
- B. digestion is stimulated and breathing rate increases.
- C. perspiration is inhibited and breathing rate decreases.
- D. breathing rate decreases and the intestines are stimulated.

Question 20

When a healthy person receives the happy news that they have won first prize in a lottery, their physiological responses will be similar to those in

- A. situation 1, in which the physiological responses are activated by the sympathetic nervous system.
- B. situation 2, in which the physiological responses are activated by the sympathetic nervous system.
- C. situation 1, in which the physiological responses are regulated by the parasympathetic nervous system.
- D. situation 2, in which the physiological responses are regulated by the parasympathetic nervous system.

Question 21

Kandel's research with *Aplysia* indicated that memory formation was associated with

- A. a weakening in communication between synapses.
- B. a decrease in the release of neurotransmitters.
- C. a strengthening in communication between synapses.
- D. the transfer of learning to other neural networks.

Use the following information to answer Questions 22 and 23.

Dr Baressi is a very experienced medical practitioner. He works in the emergency department of a hospital where patients frequently arrive with head injuries.

Question 22

Dr Baressi needs to know if the structure of a patient's brain has been damaged.

The quickest and most cost-effective brain scanning technique that Dr Baressi could use would most likely be

- A. computed tomography (CT).
- B. magnetic resonance imaging (MRI).
- C. positron emission tomography (PET).
- D. single photon emission computed tomography (SPECT).

Question 23

One of Dr Baressi's patients had damage to the medial temporal lobes in both hemispheres, including both hippocampi.

Despite the damage, this person should be able to continue to form new

- A. episodic memories.
- B. procedural memories.
- C. semantic memories.
- D. episodic and procedural memories.

Question 24

Alexander had to learn French vocabulary for a French test. He put each word into a sentence in French to help him to remember the word. This technique for remembering is an example of

- A. semantic encoding.
- B. phonemic encoding.
- C. structural encoding.
- D. maintenance rehearsal.

Question 25

Susan is healthy and a good Year 8 student. During the same week that she had a Geography test, she also had an argument with her friends. She worried about the argument so much that she found it hard to think of much else.

Susan studied for the Geography test. However, on the day of the test she was unable to remember anything that she had studied the night before.

Susan's inability to remember the Geography information she had studied is best explained by

- A. tip-of-the-tongue phenomenon.
- B. a failure of the Geography information to be transferred to her long-term memory.
- C. age-related memory decline preventing the encoding and storage of declarative information.
- D. the serial position effect causing memory loss of Geography information from Susan's long-term memory.

Question 26

In an experiment, debriefing of participants most likely includes information about

- A. each participant's own results in the study.
- B. the number of hours participants will be expected to participate.
- C. the procedures that will be required of participants during the experiment.
- D. the individual results of other participants in the study.

Use the following information to answer Questions 27 and 28.

Celia works in a busy hot bread shop that has a broken cash register. Celia needs to use mental arithmetic to calculate the amount of money customers must pay for their purchases.

Question 27

With reference to Baddeley and Hitch's model of working memory, which of the following best describes the processes that Celia would use to calculate the amount of money that each customer needs to pay?

- A. the episodic buffer to direct attention to the phonological loop and to perform the calculation
- B. the episodic buffer to visualise the arithmetic and the phonological loop to retain the information in her memory during the calculation
- C. the central executive to put together the information from the phonological loop and the iconic memory of the arithmetic during the calculation
- D. the visuo-spatial sketchpad to visualise the arithmetic involved in the calculations and the central executive to direct the attention to performing the calculation

Question 28

Which component of working memory is able to combine information from elsewhere in working memory and from long-term memory, but is not involved in the final decision of how much Celia's customers have to pay?

- A. episodic buffer
- B. central executive
- C. phonological loop
- D. visuo-spatial sketchpad

Use the following information to answer Questions 29–31.

Peter is a healthy 56-year-old man. He rode his bicycle to work and had an accident in which he sustained a head injury that affected his memory, but which did not affect his speech or motor functions.

Although Peter regained consciousness soon after the accident, he is unable to recall any of the events that have occurred since the accident. However, Peter still retains all his memories of his life before the accident and he can still recall the events leading up to the accident.

Question 29

Peter's pattern of memory loss is typical of

- A. Alzheimer's disease.
- B. retrograde amnesia.
- C. anterograde amnesia.
- D. age-related memory decline.

Question 30

A scan of Peter's brain after his accident would most likely reveal damage to

- A. Broca's area.
- B. Wernicke's area.
- C. the left temporal lobe.
- D. the medial temporal lobes and hippocampi.

Question 31

Although Peter's memory is affected, it is likely that he should still be able to

- A. learn a new bicycle route to his work.
- B. learn to use a new piece of equipment.
- C. learn the names of the doctors treating him.
- D. remember the plot of a film that he has just watched.

Question 32

A patient was about to have brain surgery. The patient gave informed consent to participate in a study using direct brain stimulation.

The study involving direct brain stimulation is an example of

- A. a case study.
- B. a double-blind procedure.
- C. an independent groups design.
- D. a matched participants design.

Question 33

It would be expected that the amount of space in the somatosensory cortex that is dedicated to a particular body part

- A. is determined by the size of the body part.
- B. decreases as the density of motor receptors for the body part increases.
- C. increases as the density of sensory receptors for the body part increases.
- D. decreases as the sensory function of the body part becomes more complex.

Use the following information to answer Questions 34–37.

Louisa wanted to investigate some of the work done by Ebbinghaus on the forgetting curve. In her first experiment, participants learnt a list of 13 nonsense syllables. Their memory of these items was then tested at different points in time. Louisa's research produced results that were similar to the forgetting curves in the work by Ebbinghaus.

Question 34

One hour after they had learnt the nonsense syllables the participants were likely to have forgotten approximately

- A. 10% of the information.
- B. 20% of the information.
- C. 50% of the information.
- D. 80% of the information.

Question 35

If Louisa wanted the participants in this experiment to retain a larger number of the nonsense syllables in long-term memory, she could suggest that they

- A. use narrative chaining.
- B. use maintenance rehearsal.
- C. learn the list and then learn a different list.
- D. learn the list over an extended period of time.

Question 36

In a second experiment the same participants were required to memorise a list of 13 names. One hour later the participants were tested and were asked to list the names that they remembered.

In this experiment the rate of forgetting on the test would most likely have been

- A. the same as for the nonsense syllables.
- B. slower than for the nonsense syllables.
- C. faster than for the nonsense syllables.
- D. slower at the start and then accelerating until it became the same as for the nonsense syllables.

Question 37

In Louisa's second experiment, the dependent variable would have been the

- A. response time.
- B. rate of forgetting.
- C. type of information learnt.
- D. time taken to learn the words.

Question 38

Which of the following is an important component of both the peg-word method and method of loci mnemonic devices?

- A. rhyming
- B. chunking
- C. visualisation
- D. simplification of information to be remembered

Use the following information to answer Questions 39 and 40.

Victor and Mia enrolled in Art History at university. Victor had not studied the subject before, whereas Mia had studied it the year before. At the beginning of the semester they were given a test to find out how much they knew about famous artists. In this test they were asked to identify the names of 10 famous artists from a list of 20 names. At the end of the semester they were given a different test. In this test they had to remember and write out a list of the names of the 10 famous artists and their paintings.

Question 39

The tests at the beginning and end of the semester, respectively, were examples of

- A. recall and cued recall.
- B. recognition and recall.
- C. relearning and recognition.
- D. relative sensitivity and recall.

Question 40

In the previous year, when Mia had studied for the end of semester test, it took her four hours to learn the material. When she studied for the test this time it only took her two hours to learn the material. Mia calculated the savings score for her relearning as 50%. This savings score indicates that she

- A. recalled 50% of the information from the previous year.
- B. relearned 50% of the information from the previous year.
- C. took 50% less time to study for the second test.
- D. could only remember the correct information for the second test 50% of the time.

Use the following information to answer Questions 41 and 42.

Andrew is a healthy, elderly man who has retired from his career as a professor of engineering. He has very clear memories of his childhood but finds that he occasionally forgets some of the people and technical information associated with his career. In his retirement, Andrew has enjoyed studying physics.

Question 41

According to the decay theory of forgetting, Andrew's forgetting of career-related information would most likely be due to

- A. poor consolidation of the memory trace at the time of learning.
- B. fading of the chemical or physical memory trace for the information.
- C. the slowing of the central nervous system that accompanies old age.
- D. interference by new information acquired through his study of physics since his retirement.

Question 42

The observation that Andrew has clear memories of his childhood experiences but poorer memory of career-related information could be considered evidence of

- A. interference theory.
- B. a strength of the decay theory of forgetting.
- C. a limitation of the decay theory of forgetting.
- D. memories decaying through disuse over time.

Question 43

Con started a new job and tried to memorise the telephone number of his new workplace. However, in the first few weeks of his new job, whenever someone asked for the new telephone number Con could only remember the telephone number from his previous workplace.

When trying to remember his new telephone number, Con is most likely experiencing

- A. retrograde amnesia.
- B. motivated forgetting.
- C. proactive interference.
- D. retroactive interference.

Question 44

According to the interference theory of forgetting, information is most likely to be forgotten when

- A. similar information is learnt soon afterwards.
- B. different information is learnt soon afterwards.
- C. similar information is learnt after a considerable delay.
- D. different information is learnt after a considerable delay.

Question 45

In psychological research, an important role of an ethics committee is to

- A. ensure that all participants are paid regularly while they are involved in the research.
- B. monitor the research through progress reports and inspection visits.
- C. allocate participants randomly and equally to the control and experimental groups in the research.
- D. ensure that all participants are treated equally and experience the same conditions as each other throughout the research.

SECTION B – Short answer questions**Instructions for Section B**

Answer **all** questions in the spaces provided. Write using black or blue pen.

Question 1

Sleep researcher William Dement ran a study on healthy adults. For five nights he woke volunteer participants every time their electroencephalograph (EEG) showed beta-like waves. On the sixth night, participants were allowed to sleep uninterrupted.

- a. Which stage of sleep were participants likely to be in when they were awakened?

1 mark

- b. Identify and explain the likely sleep recovery pattern which would occur on the sixth night of this study.

2 marks

Question 2

In terms of content limitation, how is daydreaming different to meditation?

2 marks

Question 3

Two boys, Jason and Eric, were playing football at school. Jason fell to the ground and hit his head. After the fall, Jason was able to speak but seemed confused. Eric wanted to determine whether Jason was experiencing an altered state of consciousness.

- a.** Describe one characteristic of an altered state of consciousness. How could Eric use this to determine Jason's state of consciousness?

2 marks

- b.** After the accident, Jason was taken to hospital to be examined by a doctor.

Name and describe one physiological test that might be performed to find out if Jason was experiencing an altered state of consciousness.

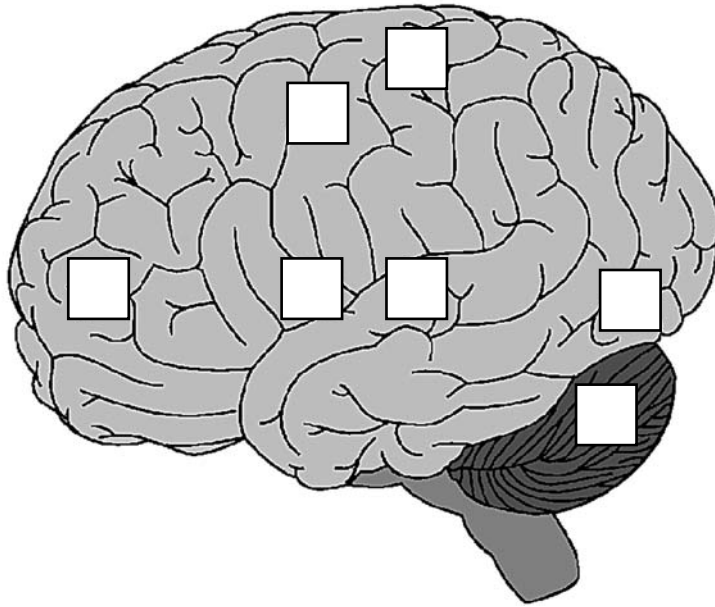
Test _____

Description _____

2 marks

Question 4

- a. A person experiences sound-colour synaesthesia when a sound is heard. Using the diagram below, place a cross (×) in the **two** boxes that represent the primary cortex areas that are most likely to be activated when a person experiences sound-colour synaesthesia.



1 mark

- b. i. Define synaesthesia.

- ii. Describe one theory of what is thought to underlie the experience of synaesthesia.

2 + 2 = 4 marks

Question 5

Why are the long-term declarative memory abilities of normal, healthy young adults usually better than the long-term declarative memory abilities of normal, healthy, elderly people?

3 marks

Question 6

Explain how the characteristic shape of the serial position curve provides evidence for the existence of short-term and long-term memory stores.

3 marks

Question 7

Use an example to explain semantic network theory.

3 marks

Question 8

a. Define the tip-of-the-tongue phenomenon.

1 mark

b. How does the tip-of-the-tongue phenomenon help to support the retrieval failure theory of forgetting?

2 marks

Question 9

A car hit Liz when she was walking across a busy road. She was not seriously injured but she was very upset. Ever since the accident, Liz has preferred not to remember the details of what happened.

William was an eyewitness at the accident. He was asked by the police to make a written statement at the scene of the accident.

About one month after the accident, a friend asked Liz about it. However, Liz claimed that she could not remember any details about the accident.

- a. Which theory of forgetting best describes why Liz had difficulty remembering the accident?
Justify your answer.

3 marks

At the court case a year after the accident, William provided an account that was more detailed and lively than the original written statement which he had provided to the police.

- b. With reference to work by Loftus, explain why William's original written statement to the police differed from the account that he provided in court one year later.

2 marks

Question 10

Theo is an actor who learns the words of the play at home but then finds that he has trouble remembering them when he is performing on stage.

Explain how Theo could use state-dependent cues to help him remember the words of the play when he is performing on stage.

2 marks

Question 11

A patient is suffering from spatial neglect.

Name the most likely area of damage in the cerebral cortex. Describe one symptom which the patient is likely to display.

2 marks

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END OF SECTION C
TURN OVER

Clearly number all responses in this space.

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END OF QUESTION AND ANSWER BOOK