

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.

AREA OF STUDY 1 – Brain and nervous system**Question 1**

The cerebral cortex

- A. is wrinkled and this increases the surface area.
- B. connects the two hemispheres of the brain.
- C. is approximately 3.5 cm thick.
- D. controls sleep functions.

Question 2

Which of the following is the most accurate description of the association areas of the cortex?

- A. They are located in the left hemisphere and associate input from the right hemisphere.
- B. They integrate information from different parts of the brain.
- C. They include the motor and sensory areas in each lobe.
- D. They are crucial for providing basic survival needs.

Question 3

Which of the four lobes is typically responsible for receiving and processing auditory information?

- A. frontal
- B. parietal
- C. occipital
- D. temporal

Question 4

In most individuals, which one of the following groups of functions is typical of the right hemisphere of the brain?

- A. logical reasoning, writing
- B. analysing information, recognition of faces
- C. recognition of faces, comprehension of emotion
- D. imagination and creativity, analysing information

Question 5

If you put your hand over your right eye, and use your left eye to tell the time on the clock on the wall in the examination room, the visual information from your left eye would be processed in the

- A. left occipital lobe.
- B. right occipital lobe.
- C. somatosensory cortex.
- D. left and right occipital lobes.

Question 6

When a basketballer shoots for a goal, which part of the brain sends the message instructing her to raise her shooting arm?

- A. the somatosensory cortex
- B. the prefrontal lobe
- C. the occipital lobe
- D. the motor cortex

Question 7

Neglect syndrome (also known as spatial neglect) is a condition where a patient typically behaves as though the left side of their world does not exist.

This condition is caused by brain damage to the

- A. right occipital lobe.
- B. right parietal lobe.
- C. left occipital lobe.
- D. left parietal lobe.

Question 8

The peripheral nervous system contains

- A. the skeletal muscles.
- B. the brain and spinal cord.
- C. all the nerves of the central nervous system.
- D. all the nerves outside the brain and spinal cord.

Question 9

Maria felt an insect crawling on her right hand. The _____ initially registered this information and shortly afterwards Maria shook her arm and the insect flew away.

- A. motor cortex of her left hemisphere
- B. motor cortex of her right hemisphere
- C. somatosensory cortex of her left hemisphere
- D. somatosensory cortex of her right hemisphere

Question 10

The alarm reaction stage of the General Adaptation Syndrome (GAS) is usually characterised by

- A. an increase in illnesses such as the flu.
- B. an immediate release of cortisol into the bloodstream.
- C. an initial decrease in blood pressure and body temperature, followed by an increase in both.
- D. an initial increase in blood pressure and body temperature, followed by a decrease in both.

Question 11

According to the General Adaptation Syndrome (GAS), in the first stage the body produces physiological changes that accompany the fight/flight response in an attempt to resist the stressor.

If the stressor is **not** removed at this point

- A. the body will enter the 'shock' phase.
- B. the body's arousal will return to normal.
- C. the body will maintain the fight/flight response.
- D. adrenaline will continue to be released into the bloodstream and cortisol will stop being released.

Question 12

Karlee, a Year 12 student, felt very stressed during the year. As her examinations came closer, she started complaining of painful stomach aches. After her doctor examined her, he concluded that her stomach aches were psychosomatic.

This diagnosis means that Karlee's stomach aches were

- A. caused by her imagination.
- B. part of her fight/flight response.
- C. genuine physical symptoms with psychological causes.
- D. genuine psychological symptoms with physical causes.

Question 13

Zoe, an elderly woman with a pacemaker, needs to have a brain scan to investigate a possible brain abnormality.

If her neurosurgeon wants to investigate the function of Zoe's brain, but avoid invasive injections, which of the following would be the best technique for the neurosurgeon to use?

- A. CT scan
- B. PET scan
- C. MRI scan
- D. fMRI scan

Question 14

The autonomic nervous system accounts for

- A. higher-order thinking.
- B. the perception of pain.
- C. the ability of patients to move limbs even when unconscious.
- D. the ability of patients to continue breathing even when unconscious.

Question 15

A researcher was interested in studying the effects of stress on the immune system. One hundred healthy volunteers filled out a stress-rating scale and were then injected with a non-life-threatening virus. Based on what is known about stress and the immune system, the researcher most likely found that volunteers who reported higher levels of stress on the stress-rating scale

- A. did not report any effect of the injected virus.
- B. showed lower rates of infection than those with lower stress levels.
- C. felt energised as their bodies entered the resistance stage of the GAS.
- D. had lower levels of the disease-fighting white blood cells than those with lower stress levels.

Question 16

Which of the following statements about case studies is the most correct?

- A. Case studies can provide ideas for further research.
- B. A case study is a useful experimental method.
- C. A case study uses only non-invasive techniques to study the brain.
- D. Results from a case study are able to be generalised in most situations.

Question 17

Which of the following is the most correct statement about electrical stimulation of the surface of the brain?

- A. It is a non-invasive method.
- B. The patient may be conscious.
- C. The electrical current cannot be precisely delivered.
- D. The electroencephalograph delivers a mild electrical current.

Question 18

Dr Hart wishes to undertake a case study of some patients who have suffered brain damage. Several of the patients cannot speak English. Dr Hart translates the consent document into the patients' first language and ensures that it is fully explained to the patients before asking them if they wish to participate.

The ethical principle Dr Hart has adhered to is

- A. justice.
- B. privacy.
- C. beneficence.
- D. respect for persons.

AREA OF STUDY 2 – Visual perception**Question 19**

Visual perception processes begin when _____ energy is changed into _____ energy.

- A. chemical; electromagnetic
- B. electromagnetic; electrochemical
- C. electromagnetic; chemical
- D. electrochemical; electromagnetic

Question 20

In the visual perception process, which of the following occurs first?

- A. selection
- B. reception
- C. transmission
- D. feature detection

Question 21

In visual perception, the process of transduction takes place in the

- A. lens.
- B. pupil.
- C. occipital lobe.
- D. photoreceptors.

Question 22

The process of selection in the visual perception system involves

- A. coding particular features of a visual stimulus.
- B. selecting groups of visual data to create a whole image.
- C. selecting data in the visual field for focusing on the retina.
- D. selecting the visible light spectrum and ignoring ultraviolet and infrared waves.

Question 23

James was asked to sit in a brightly lit room while a researcher slowly turned a dimmer switch until James could identify a decrease in the amount of light in the room.

This was testing James'

- A. light threshold.
- B. absolute threshold.
- C. perceptual awareness threshold.
- D. just noticeable difference threshold.

Question 24

Rory was in his bedroom listening to music when there was a power failure and all the lights in his house and the street went out for one hour. There was no moonlight or any other source of light so Rory could not see anything in his room during this time.

Which of the following statements best describes Rory's inability to see anything in the room?

- A. The amount of light was below the absolute threshold for Rory.
- B. The amount of light was below the differential threshold for Rory.
- C. The wavelengths of light energy were just within the visible light spectrum.
- D. Rory had a 50 per cent chance of being able to see objects in his room because the light was above his threshold.

Question 25

If you move an object closer to the viewer

- A. it has little or no effect on the viewer's perception of the object's size.
- B. it causes the viewer to perceive the object as getting bigger.
- C. it changes the viewer's perception of the object's shape.
- D. it decreases the size of the retinal image of the object.

Question 26

The pattern on soldiers' uniforms is designed to assist camouflage in a jungle.

The camouflage occurs because

- A. the principle of figure-ground is applied.
- B. the principle of proximity is applied.
- C. the principle of figure-ground is not applied.
- D. the principle of proximity is not applied.

Question 27

Cara is lying under her bed hiding from her big brother, Jason. When Jason comes into the room she perceives him as standing upright, even though her retinal image of him is sideways.

Cara can do this because she is using

- A. size constancy.
- B. shape constancy.
- C. linear perspective.
- D. orientation constancy.

Question 28

Jemima has had an operation on one eye and has to wear a protective eye patch.

She will probably have some difficulty perceiving the distance of objects because she cannot use

- A. retinal disparity.
- B. accommodation.
- C. Gestalt principles.
- D. pictorial depth cues.

Question 29

A number of depth cues are used when perceiving the Ames room illusion.

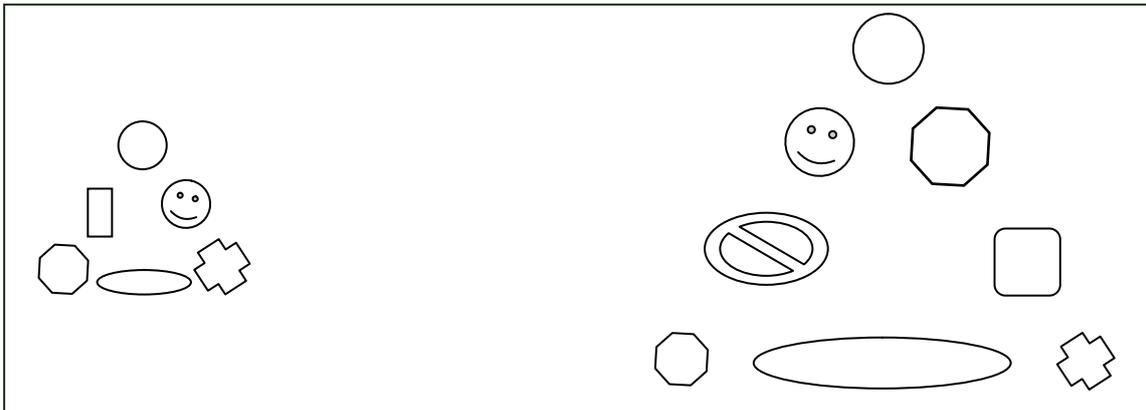
Which of the following is a depth cue that is **not** used?

- A. figure-ground
- B. convergence
- C. accommodation
- D. linear perspective

Question 30

Which one of the following constancies is **not** maintained in the Ames room illusion?

- A. size
- B. shape
- C. brightness
- D. orientation

Question 31

When Ricky views the diagram above, he perceives two triangles. On closer inspection, he notices that one triangle is made up of 6 parts and the other triangle is made up of 8 parts.

When Ricky perceived the diagram as two triangles, he applied the Gestalt principle(s) of

- A. closure and proximity.
- B. closure and similarity.
- C. figure-ground only.
- D. closure only.

AREA OF STUDY 3 – States of consciousness

Question 32

The awareness of objects and events in the external world, and of the subject's own existence and activities, is defined as

- A. consciousness.
- B. focused attention.
- C. the sleep/wake cycle.
- D. an altered state of consciousness.

Question 33

Bray is experiencing an altered state of consciousness that has led to heightened arousal. Therefore, Bray is experiencing a(n) _____ in perspiration that causes a(n) _____ in the level of electrical conductivity on the surface of his skin.

- A. increase; increase
- B. decrease; increase
- C. decrease; decrease
- D. increase; decrease

The following information relates to Questions 34 and 35.

Billie conducted an experiment that required participants to perform three different types of tasks. The tasks differed in the level of complexity according to the following table.

Task	Level of complexity
A	difficult
B	medium
C	simple

First Billie asked the participants to perform each task individually. She noted the number of errors that each participant made on each task.

Billie then asked each participant to perform two of the tasks simultaneously. They performed all three combinations (tasks A and B, tasks A and C, and tasks B and C) in random order.

Question 34

Compared to the other tasks, _____ requires _____ attention to be completed successfully.

- A. A; divided
- B. A; selective
- C. C; divided
- D. C; selective

Question 35

When performed simultaneously, which of the following tasks were most likely able to be completed with the least number of errors?

- A. A and B
- B. B and C
- C. A and C
- D. There will be no difference in errors between the three combinations.

Question 36

Dr Shapiro, a school teacher, is showing a documentary program in his class. Near the end of the class he notices that some students are not watching the television screen. Colin is busy working on a crossword, Monica is staring, dreamily, out the window and Keong has recently fallen asleep at the table.

If Dr Shapiro could monitor his students' brainwave patterns, he is likely to find that the prominent brainwave pattern for Colin is _____ waves; Monica is _____ waves and Keong is _____ waves.

- A. beta; alpha; theta
- B. alpha; beta; theta
- C. theta; alpha; delta
- D. beta; alpha; delta

Question 37

During Stage 1 sleep, a person

- A. is more likely to dream than during other stages.
- B. is often difficult to wake up.
- C. has a very low body temperature.
- D. may experience very brief muscular contractions.

Question 38

Stage 3 sleep primarily consists of

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

Question 39

Recordings from an electromyograph (EMG) can distinguish between rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep because there is

- A. never any movement of the muscles in REM sleep, unlike NREM.
- B. never any movement of the muscles in NREM sleep compared to REM.
- C. an increase in movement of the muscles in REM sleep compared to NREM.
- D. an increase in movement of the muscles in NREM sleep compared to REM.

Question 40

Renee is extremely tired, due to lack of sleep the previous night. As a result, she is more likely to experience difficulty in performing _____ tasks while her ability to perform _____ tasks will probably be unaffected.

- A. simple; complex
- B. complex; simple
- C. verbal; nonverbal
- D. nonverbal; verbal

Question 41

Mel is suffering from hypersomnia.

He is likely to

- A. fall asleep immediately upon going to bed.
- B. have difficulty falling asleep upon going to bed.
- C. experience sudden REM sleep episodes during wakeful periods of the day.
- D. experience sudden NREM sleep episodes during wakeful periods of the day.

Question 42

Sleep apnea is defined as

- A. loud, long and consistent snoring during sleep.
- B. briefly awakening from sleep throughout the night.
- C. temporary cessation of breathing during sleep for 2 to 20 seconds.
- D. temporary cessation of breathing during sleep for 20 seconds to 2 minutes.

Question 43

Sleep talking occurs in

- A. REM sleep only.
- B. Stage 1 sleep only.
- C. Stages 3 and 4 sleep only.
- D. both REM and NREM sleep.

Question 44

Harvey, a university researcher, designs an independent-groups experiment. The experiment is testing the effect of a new drug on relieving symptoms of sleep apnea. He obtains informed consent from the participants. He uses a single blind experiment.

This means that

- A. only one group of participants know whether they are receiving the placebo or the real drug.
- B. the participants do not know about the nature of the experiment, unlike Harvey who does know.
- C. Harvey does not know about the nature of the experiment, unlike the participants who do know.
- D. the participants do not know whether they are taking the placebo or the real drug, unlike Harvey who does know.

SECTION B – Short answer questions

Instructions for Section B
Answer **all** questions in the spaces provided.

AREA OF STUDY 1 – Brain and nervous system

Question 1

Pronouncing words correctly is a function of _____ 's area, which is typically located in the _____ lobe.

2 marks

Question 2

Sperry pioneered research on split-brain patients.

In one study, a picture of an object was presented to the right visual field of split-brain patients. The patients were all right-handed males. The patients were then shown a number of objects. They were asked to identify the original pictured object by pointing to it. They could use either hand. They were also asked to name the object.

Sperry then presented the picture of another object to the left visual field. The patients were then asked to **identify** the original pictured object from among a number of other objects by pointing to it with either hand. They were also asked to name the object.

What were the results for this study in regard to the following?

- a. when patients were asked to name the pictured object presented to the right visual field

1 mark

- b. when patients were asked to identify the pictured object presented to the right visual field

1 mark

- c. when patients were asked to name the pictured object presented to the left visual field

1 mark

- d. when patients were asked to identify the pictured object presented to the left visual field

1 mark

Question 3

One of the limitations of using the polygraph as a lie detector is that some people may be able to falsify the readings by inflicting pain on themselves.

Explain how inflicting pain may lead to a false reading.

3 marks

Question 4

Alyse stays up late to watch a horror movie. During the movie she becomes very frightened and her fight/flight response is triggered, and then she calms down.

- a. Which branch of the autonomic nervous system is responsible for triggering Alyse's fight/flight response?

1 mark

- b. Describe two physiological responses that Alyse may experience when her fight/flight response is triggered.

2 marks

- c. Explain how these physiological responses aid survival in a life-threatening situation.

1 mark

Question 5

Farrah's neurologist has explained that she needs to undergo a Computerised Tomography (CT) scan to assess the damage to her brain.

- a. How is structural information about the brain collected by a CT scan?

1 mark

- b. Compared to an MRI scan, what is a significant limitation of the CT scan?

1 mark

- c. The damage to Farrah's brain is within the association area of her frontal lobe.
Describe **one** possible effect that could result from this damage.

1 mark

Question 6

David is experiencing some intense stress as a result of traumatic events both at home and at school. As a consequence, David has experienced some uncharacteristic psychological and physiological effects.

- a. What is one emotional response that David could be experiencing as a result of this intense stress?

1 mark

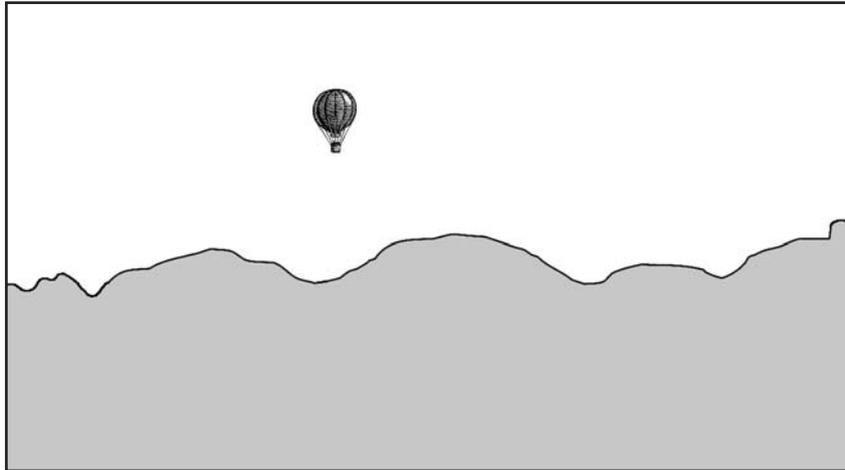
- b. David is now suffering from indigestion.

In terms of the autonomic nervous system, explain why David's digestive system has been affected by the intense stress.

1 mark

AREA OF STUDY 2 – Visual perception

Question 7



- a. Using only height in the visual field, describe how an artist would draw a second balloon of the same size to show that it is further away than the one in the picture above.

1 mark

- b. Trees need to be added to the picture.
How could an artist use texture gradient to show that one tree is closer than another?

1 mark

Question 8

Explain why size constancy can be important in safely crossing a busy road.

2 marks

Question 9

a. Define the term 'perceptual set'.

1 mark

b. i. Name a factor that can affect our perceptual set.

ii. Give an example to show how this factor can affect our perceptual set.

1 + 2 = 3 marks

Question 10

a. Define the term 'illusion'.

1 mark

b. Describe the Müller-Lyer illusion and give one explanation of how this illusion works.

3 marks

Question 11

Professor Chan carried out a study that investigated the effects of wearing an eye patch over one eye for 7 days on the ability to accurately perceive distance.

Some of her students volunteered to wear the eye patch and she compared their results with those of the local footballers, who did the same tasks with no eye patch.

Explain **why** her research could be criticised on the basis of

- a.** selection of participants

1 mark

- b.** allocation of participants.

1 mark

AREA OF STUDY 3 – States of consciousness

Question 12

Jim is unwell and suffering from a very high fever. He is displaying a number of signs that indicate that he is experiencing an altered state of consciousness, including cognitive and perceptual changes from normal waking consciousness.

Give **one** specific example of a cognitive change and **one** specific example of a perceptual change that Jim may be experiencing.

Cognitive change _____

Perceptual change _____

2 marks

Question 13

Plinio visited a sleep laboratory for the night. In the laboratory a number of physiological measures were taken. These measures included an electrooculogram (EOG) and an electroencephalogram (EEG).

a. i. What does an electrooculogram (EOG) measure?

ii. What does an electroencephalogram (EEG) measure?

1 + 1 = 2 marks

b. Describe the typical recordings from the electrooculogram (EOG) during Stage 4 sleep.

1 mark

c. Name and describe the two **unique** characteristics shown on the electroencephalogram (EEG) that indicate Plinio had entered Stage 2 sleep.

1. _____

2. _____

2 marks

d. Towards the morning, Plinio had a nightmare.

In terms of stages of sleep, explain why he is more likely to experience nightmares towards the morning.

2 marks

Question 14

Professor Latina, a sleep researcher, is interested in finding out if meditating for 15 minutes before bedtime will help reduce insomnia compared to no meditation. She recruits 50 people who suffer from insomnia.

Professor Latina employs a repeated measures design.

a. In terms of the procedure for this study, what does this mean?

1 mark

b. A repeated measures design will minimise extraneous variables that an independent measures design will not.

Name and explain one such extraneous variable.

2 marks

c. Professor Latina's study was approved by an ethics committee. She followed all the ethical guidelines including informed consent.

What two main pieces of information must be given to participants in order for them to decide whether or not to consent to being in the study?

1. _____

2. _____

2 marks