education

Department of
Education
FREE STATE PROVINCE

GRADE 12

LIFE SCIENCES P1

JUNE 2026

TOTAL: 150

TIME: 2½ HOURS

This question paper consists of 16 pages.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your ANSWER BOOK.
3. Start the answers to each question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. ALL drawings should be done in pencil and labelled in blue or black ink.
7. Only draw diagrams, tables or flow charts when asked to do so.
8. The diagrams in this question paper are NOT all drawn to scale.
9. Do NOT use graph paper.
10. Non-programmable calculators, protractors and compasses may be used.
11. Write neatly and legibly.

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SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 A male hormone that is responsible for the development of secondary sexual characteristics.

A LH
B FSH
C Progesterone
D Testosterone

1.1.2 Which ONE of the following changes occurs under the influence of adrenalin?

A An increased blood supply to the skeletal muscles
B Decreased blood pressure
C Decreased muscle tone of skeleton muscles
D An increased blood supply to the digestive system

1.1.3 The … transports oxygenated blood with nutrients from the placenta to the foetus.

A umbilical vein
B uterine vein
C umbilical artery
D uterine artery

1.1.4 Which ONE of the following is a function of the amniotic fluid?

A Provides nutrition to the foetus
B Protects the foetus against mechanical injury
C Supplies oxygen to the foetus
D Removes metabolic waste products from the foetus

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1.1.5 Effect of the sympathetic nervous system.

A Constricted pupils
B Increased heart rate
C Dilated blood vessels in skin
D Decreased blood pressure

1.1.6 A light stimulus is converted into a nerve impulse in the …

A iris.
B optic nerve.
C choroid.
D retina.

1.1.7 Binocular vision is best explained as …

A the use of one eye at a time to interpret an image.
B vision that is limited to black and white images.
C vision during low light intensities.
D overlapping fields of view combining images into one.

1.1.8 Hormone responsible for the thickening of the endometrium.

A FSH
B Oestrogen
C LH
D Prolactin

1.1.9 The ball of cells formed by mitosis during early embryonic development.

A Zygote
B Blastula
C Morula
D Corpus luteum

1.1.10 Which one of the following is the function of the cerebellum?

A Controls voluntary movements
B Controls involuntary actions
C Coordinates voluntary movements
D Interprets sensations from sense organs

(10 x 2) **(20)**

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1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.7) in your ANSWER BOOK.

1.2.1 Organic compound that affects a target organ as a chemical messenger

1.2.2 The period of the development of the foetus in the uterus from fertilisation to birth.

1.2.3 Part of a sperm cell that contains enzymes to break down the cell membrane of an ovum

1.2.4 The gland that produces the hormone responsible for osmoregulation

1.2.5 The part of the eye with the highest concentration of cones only

1.2.6 The part of the brain responsible for communication between the left and right hemisphere of the cerebrum

1.2.7 The nerve that carries impulses from the retina to the central nervous system **(7)**

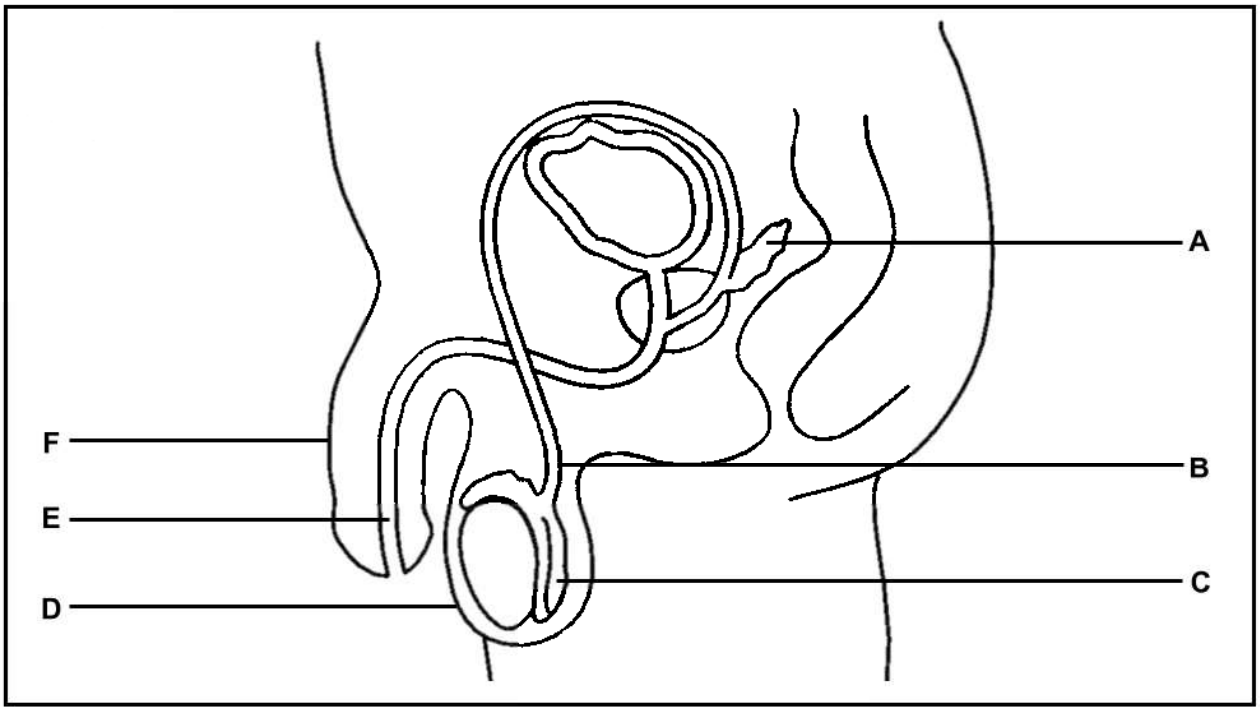
1.3 Indicate whether each of the statements in COLUMN I applies to **A only, B only, both A and B** or **none** of the items in COLUMN II. Write **A only, B only, both A and B, or none** next to the question number (1.3.1 to 1.3.3) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Act as a micro filter for the developing foetus	A: Placenta B: Cervix
1.3.2	The visual defect cause when the lens is not evenly curved	A: Astigmatism B: Cataract
1.3.3	An extra-embryonic membrane found in the amniotic egg	A: Chorion B: Allantois

(3 x 2) **(6)**

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1.4 The diagram below represents the male reproductive system.



1.4.1 Give the LETTER and NAME of the part that:

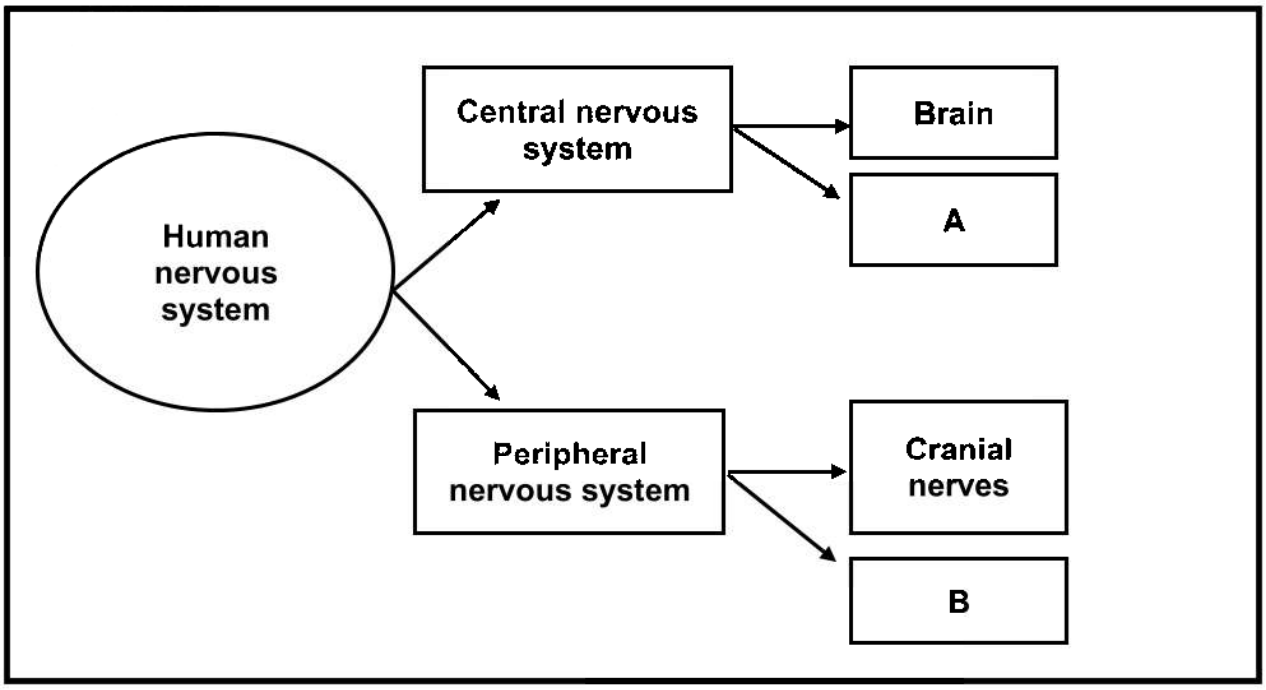
(a) Provides nutrients to the sperm (2)

(b) Transports urine and semen out of the body (2)

(c) Regulates the temperature of the testes (2)

(d) Stores sperm temporarily (2)
(8)

1.5 The flow diagram below represents the components of the human nervous system.



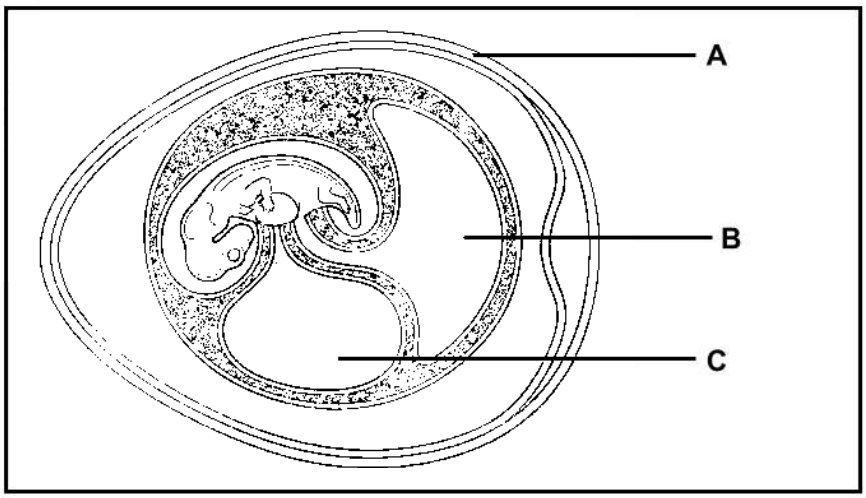
1.5.1 Identify part:

(a) **A** (1)

(b) **B** (1)

1.5.2 Name THREE ways in which the brain is protected. (3)
(5)

1.6 The diagram below represents the amniotic egg.



1.6.1 Give the LETTER and the NAME of the part that:

(a) Provides nutrition to the embryo (2)

(b) Prevents dehydration and provides protection (2)
(4)

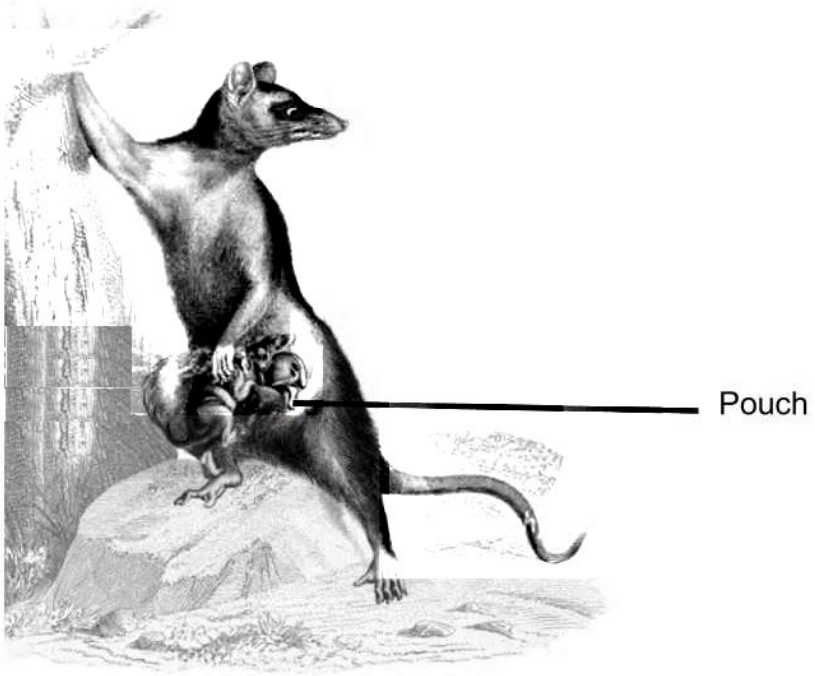
TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 Read the extract below.

American opossums are viviparous and give birth to 16 - 20 offspring with a high survival rate. The tiny new born "pinkies" crawl into the mother's pouch. They remain inside the pouch for several months, continuing to develop while being nurtured by the mother's milk. New-born opossums' eyes are closed, have pinkish skin and are hairless.



2.1.1 Fertilisation in opossums takes place internally.

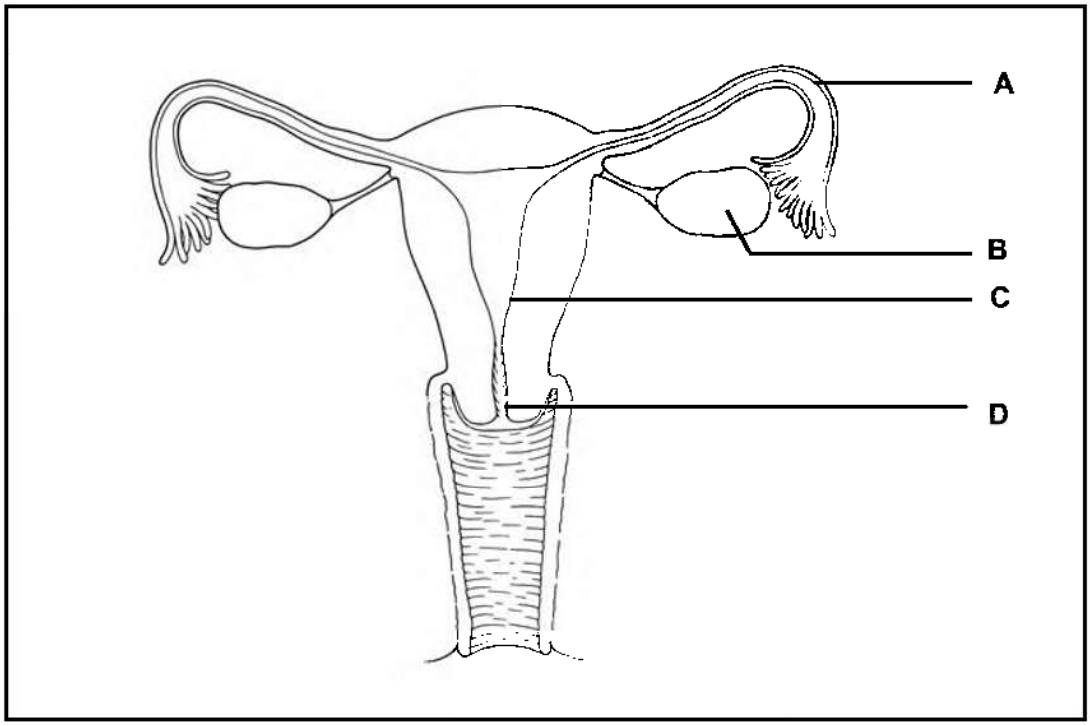
State TWO advantages of internal fertilisation. (2)

2.1.2 Explain why the opossums are viviparous. (2)

2.1.3 Name THREE characteristics of opossums that display altricial development from the extract. (3)

2.1.4 Explain ONE reason why opossums have a high survival rate. (2)
(9)

2.2 The diagram below represents the female reproductive system.



2.2.1 Identify part **A.** (1)

2.2.2 Give the LETTER and NAME of the part that dilates to allow the foetus through to the birth canal (2)

2.2.3 Name and describe the process of gametogenesis that takes place in part **B.** (6)

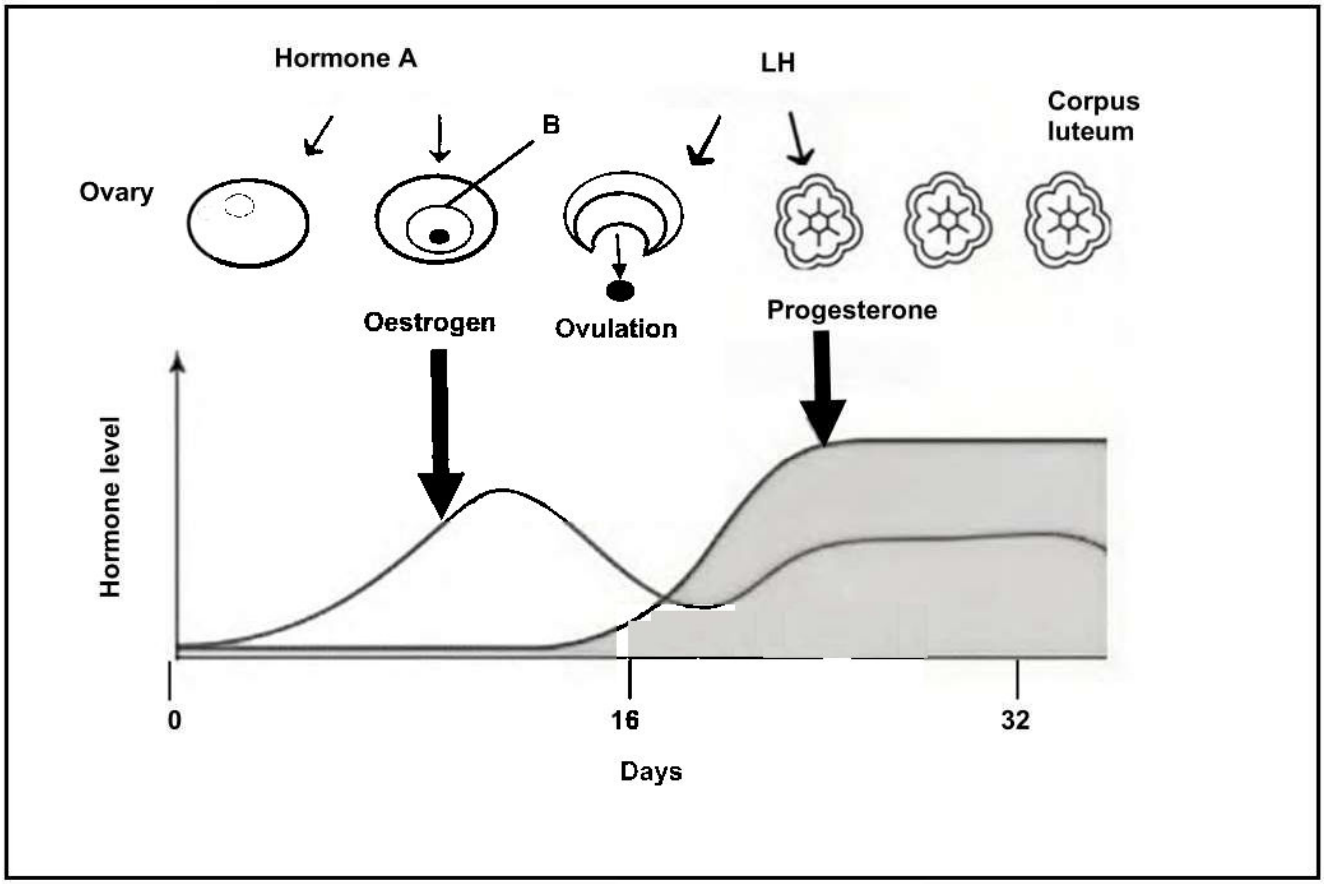
2.2.4 Uterine fibroids are common, non-cancerous growths within the uterus that can cause abnormally heavy bleeding while shedding part **C.**

Explain how this condition will affect the chances of a successful pregnancy. (3)
(12)

2.3 Describe how the placenta develops after implantation. **(5)**

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2.4 The diagram below illustrates hormonal control during the menstrual cycle of a female.



2.4.1 Identify:

(a) Hormone **A**. (1)

(b) Structure **B**. (1)

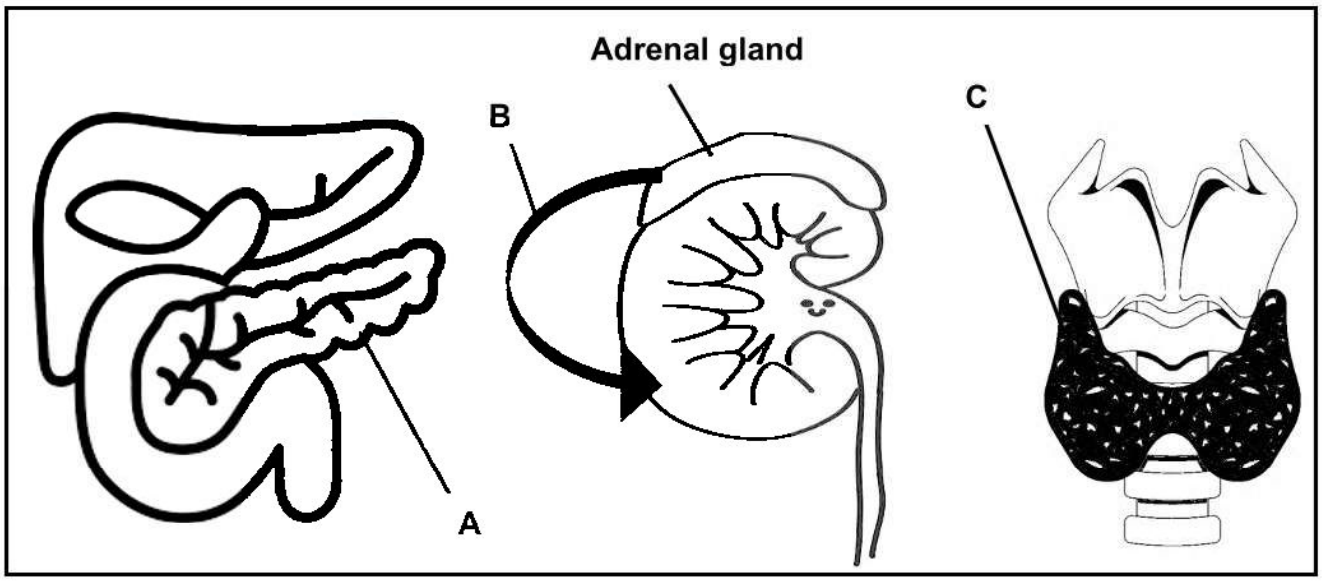
(c) The day of ovulation. (1)

2.4.2 Give TWO visible reasons that indicate this female is pregnant. (2)

2.4.3 State TWO functions of Luteinising hormone (**LH**) during the menstrual cycle. (2)

2.4.4 Name and describe the mechanism that will prevent the production of ova in this cycle. (5)
(12)

2.5 The diagrams below represent endocrine glands in the human body.



2.5.1 Identify:

(a) Gland **A** (1)

(b) Hormone **B** (1)

(c) Gland **C** (1)

2.5.2 Describe the effect of the secretion of high levels of insulin on blood glucose levels. (6)

2.5.3 Tabulate ONE difference between endocrine and exocrine glands. (3)
(12)

TOTAL QUESTION 2: [50]

QUESTION 3

3.1 Video games are widely enjoyed by younger generations, and numerous studies have demonstrated their positive effects on brain function and cognitive abilities.

A study conducted by the Department of Ophthalmology in India investigated the differences in visual reaction time between gamers.

The steps were as followed:

The study included 45 students aged 21–24 years.

Participants were divided into three groups: 15 gamers, 15 semi-gamers, and 15 non-gamers.

Classification of students was based on weekly gaming time:

- **Gamers**: more than 5 hours per week
- **Semi - gamers**: 1–5 hours per week
- **Non - gamers**: no gaming activity

A reaction time application (**Banensoft, version 1.12.3**) was downloaded from the Play Store and installed on an Android smartphone (Xiaomi Redmi 5).

Testing was conducted in a well-lit room.

The phone was placed horizontally on a desk and brightness set to 100%.

Participants were instructed to sleep at least seven hours before testing.

Clear instructions were provided. The participants must tap the screen when the colour changed from red to green.

Each participant completed five trials.

The average reaction time (in milliseconds) was recorded.

The results are shown in the table below.

DIFFERENT GROUPS	NUMBER OF PARTICIPANTS	AVERAGE VISUAL REACTION TIME (ms)
Gamers	15	150
Semi - gamers	15	300
Non - gamers	15	350

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3.1.1 Name the part of the brain responsible for controlling cognitive abilities. (1)

3.1.2 Identify:

(a) The dependent variable (1)

(b) The group with the fastest visual reaction time (1)

3.1.3 Give TWO:

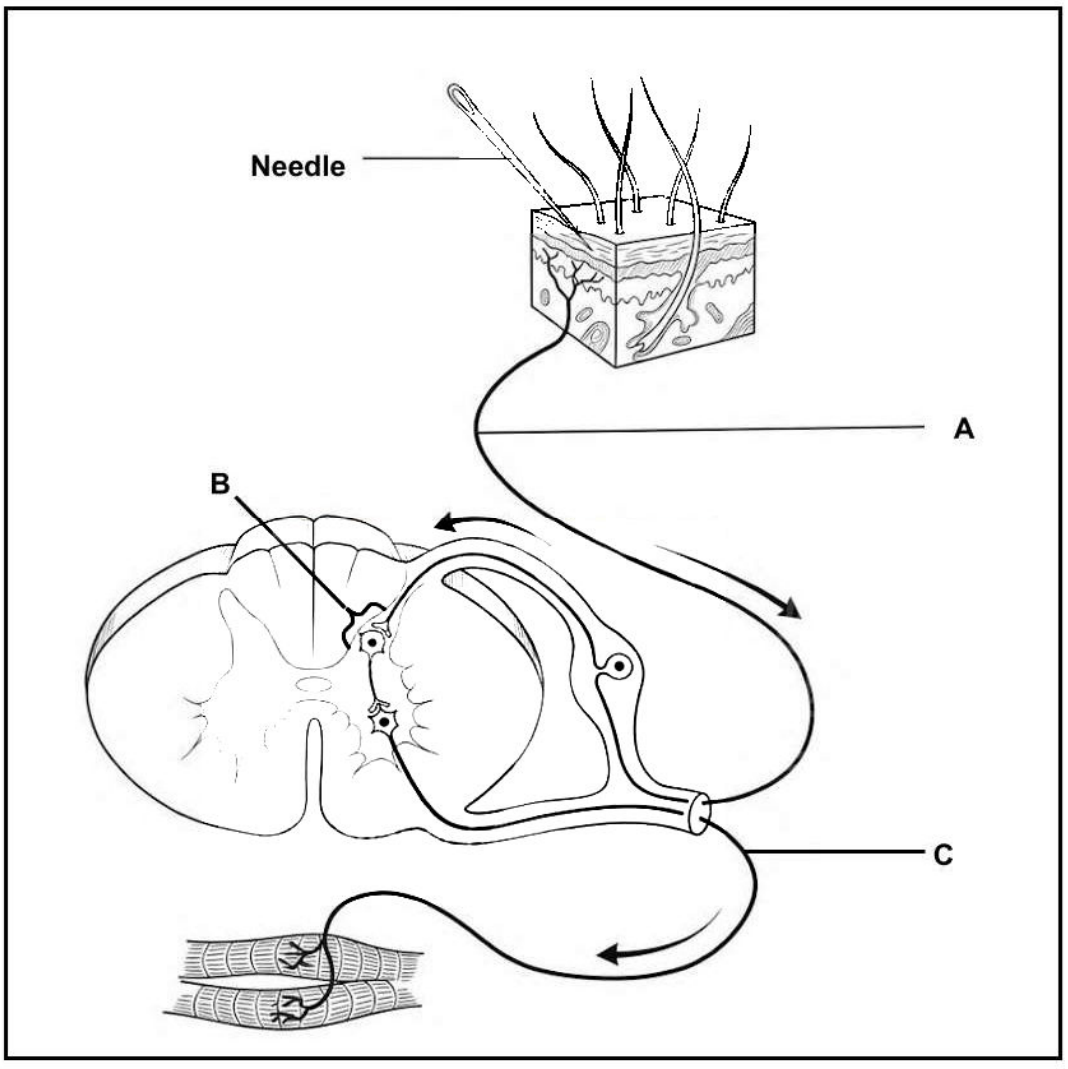
(a) Factors that were kept constant (2)

(b) Ways in which the reliability of the results of the investigation was ensured. (2)

3.1.4 Explain why non-gamers were included in the investigation. (2)

3.1.5 Draw a bar graph to show the results in the table. (6)
(15)

3.2 The diagram below shows a reflex arc.



3.2.1 Name the:

(a) Type of neuron **C.** (1)

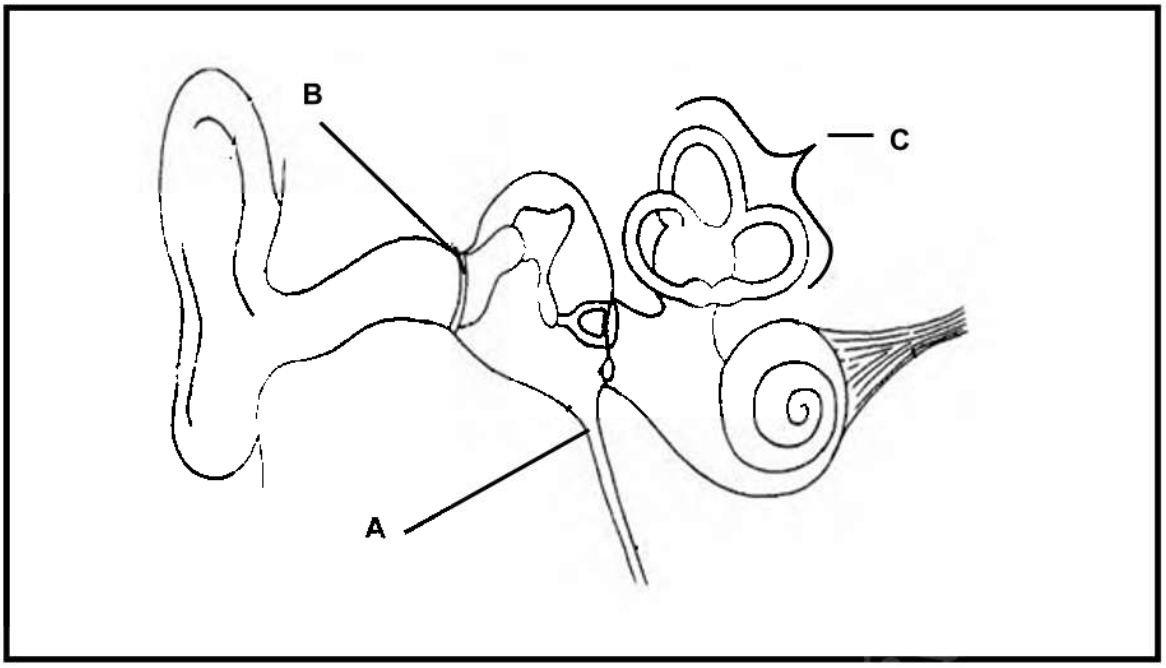
(b) Function of neuron **A.** (1)

3.2.2 State the function of the microscopic gap **B**? (1)

3.2.3 Explain how the response to a stimulus will be affected if neuron **C** is damaged? (2)

3.2.4 Describe the pathway of the nerve impulse from the moment it is detected by the receptor until a response is generated. (6)
(11)

3.3 The diagram represents a human ear.



3.3.1 Identify structure **A** (1)

3.3.2 *Acute otitis media* is an ear infection caused by a virus or bacteria in the middle ear. It results in the fluid building up in the middle ear.

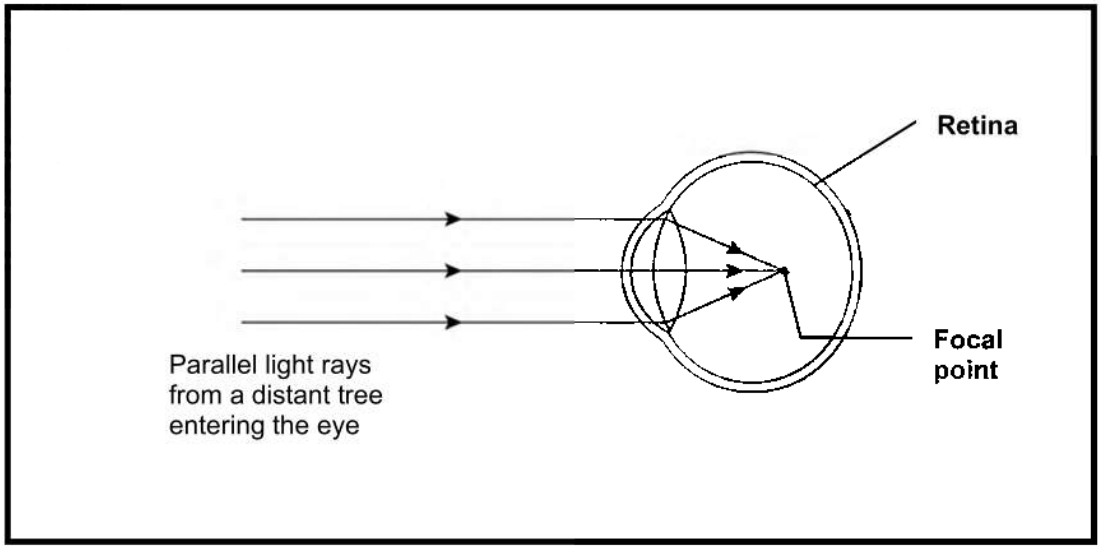
(a) Describe ONE method by which *Acute otitis media* can be treated. (2)

(b) Explain why the treatment mentioned in Question 3.3.2(a) is needed for the proper functioning of part **B.** (4)

3.3.3 Name the receptors located in structure **C** and describe their role in maintaining balance. (5)
(12)

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3.4 The diagram represents part of the eye and a related visual defect.



3.4.1 Identify the eye defect illustrated in the diagram (1)

3.4.2 Explain how the defect identified in QUESTION 3.4.1 can be corrected. (3)

3.4.3 List **TWO** parts of the eye, other than the lens, that contribute to the refraction of light. (2)

3.5 A person with normal vision who has been looking at a distant tree, looks at an object in their hand. For a split second, the object appears blurred before becoming clear. Discuss how the eye adjusted to ensure a clear image is formed. (6)
(12)

TOTAL QUESTION 3 50

TOTAL SECTION B: 100
GRAND TOTAL: 150

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