NATIONAL UNIVERSITY OF LESOTHO

FACULTY OF EDUCATION

BEP 1311: BIOLOGY FOR THE PRIMARY TEACHER

TIME: 3 HOURS **MARKS: 100**

INSTRUCTIONS

- This paper has **FIVE** questions.
- **Answer any four questions**
- Begin each question on a new page.
- Use pencils for drawing, and pen for labelling.

QUESTION ONE

a) **Fig. 1.1** shows the unlabelled diagrams of a plant and an animal cell.

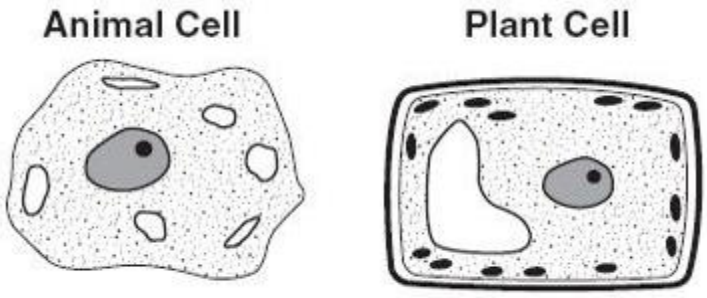

Fig. 1.1

i. State **two** observable **similarities** and **differences** between a plant cell and an animal cell. [4]

ii. **Table 1** gives information about the parts of the cell and their functions. The parts of a cell are represented by the letters A-F

Name the parts of the cell represented by letters A-F. [6]

Table 1

Part of a cell	**Function**
A	Helps keep plant rigid
B	Matter that makes up most the cell and where chemical reactions takes place
C	Controls what goes in and out of the cell
D	Contains green pigment chlorophyll that traps light energy in photosynthesis
E	Controls the chemical reactions in the cell
F	Holds water to keep cytoplasm up against the cell wall

b) Cells are microscopic, and can be seen using a light microscope.

i. Describe how one would prepare a slide of an **onion cell** for observation under light microscope. [5]

ii. Draw a labelled diagram to show how the cells would be seen under light microscope. [5]

c) Plant and animal cells are specialised.

i. Name any one specialised cell. [1]

ii. Describe how the named specialised cell in c) i. is adapted to perform its function. [4]

[TOTAL: 25]

QUESTION TWO

Digestion in the human digestive system is carried out by the action of enzymes.

a) The diagrams in **Fig. 1.1-1.3** represent the action of a specific enzyme to break down a substrate into one or more end products. **Fig. 1.1** has been completed for you.

Copy and complete **Fig. 1.2** and **Fig. 1.3**

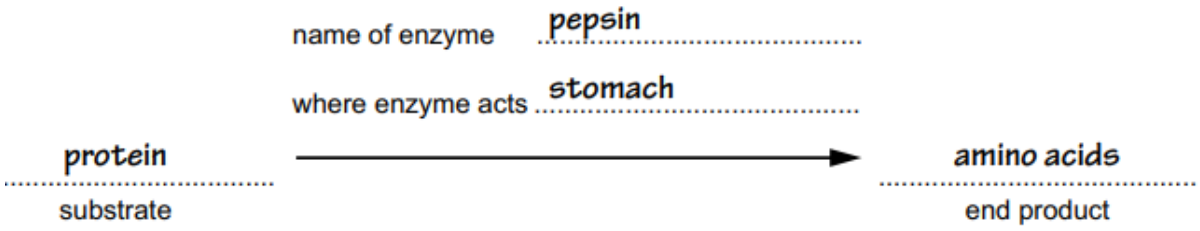

Fig. 1.1

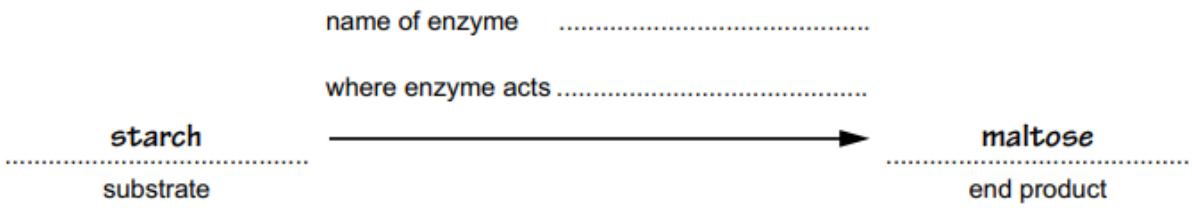

Fig. 1.2

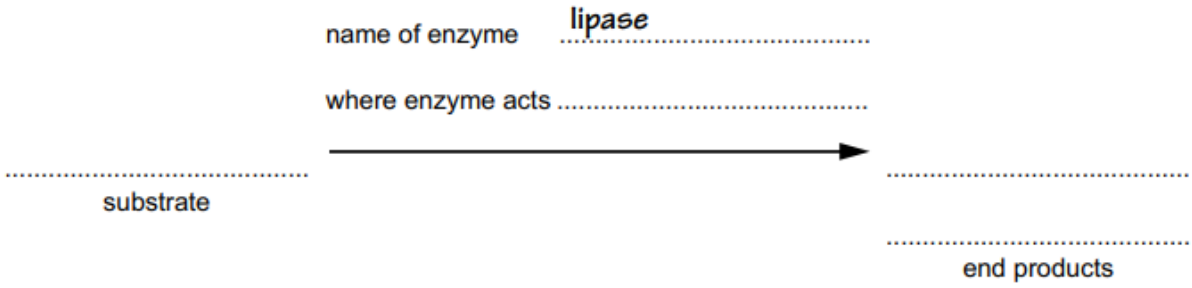

Fig. 1.3

[6]

b) Outline the characteristics of enzymes. [4]

c) Using a labelled diagram, describe how the villi are adapted for absorption. [10]

d) Teeth play a major role in mechanical digestion. Describe tooth decay and how it can be prevented. [5]

[TOTAL: 25]

QUESTION THREE

a) State the main differences between breathing and respiration. [2]

b) State any three uses of energy released in Respiration [3]

c) Describe the process of Inhalation [5]

d) Daw a labelled diagram of the human heart [5]

e) Describe double circulation in humans. [5]

f) Describe anaerobic respiration in yeast, and state its application in industries. [5]

[**TOTAL: 25]**

QUESTION FOUR

a) Fig. 4.1 shows a leaf and the flower of *Helleborus orientalis.*

Fig. 4.1

i. From the scientific name, state the genus and the species name. [2]

ii. State t**wo** visible features that shows that *H. orientalis* is a dicot. [2]

iii. Describe how the leaf and the flower structure of a maize plant would be different from that of *H. orientalis.* [2]

b) Justify, why the flower of *H. orientalis* is said to be a bisexual flower. [4]

c) Fig. 4.2 shows the diagram of a leaf of *H. orientalis.*

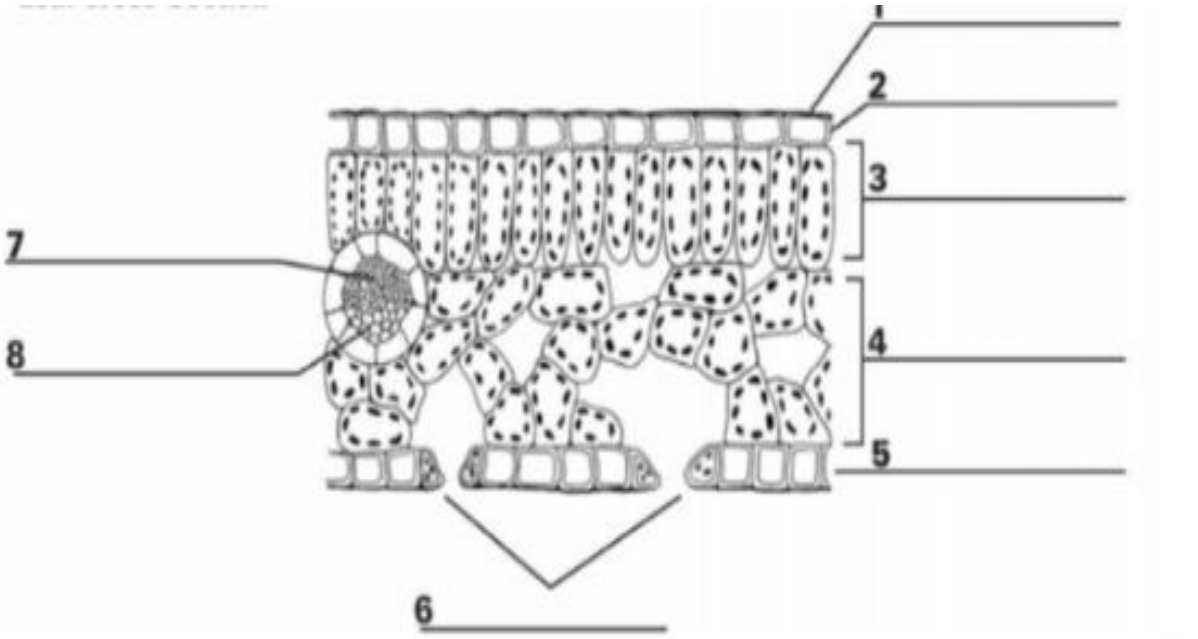

Fig. 4.2

i. Label the parts of a leaf and state how it is adapted for photosynthesis. [10]

d) Describe the steps one would follow to test *H. orientalis* leaf for starch. [5]

[TOTAL: 25]

QUESTION FIVE

a) List **any four** female secondary sexual characteristics. [4]

b) Describe the role of the **four** hormones that control the menstrual cycle. [4]

c) Fig. 5.1 shows a diagram of a male reproductive system.

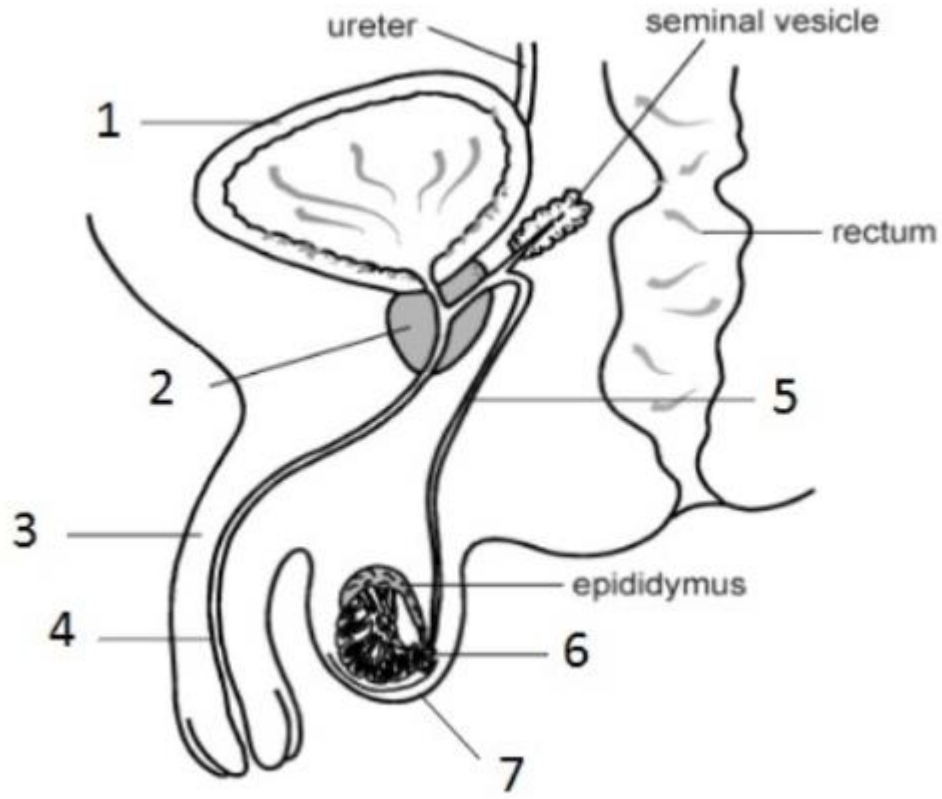

Fig. 5.1

i. Name and state the functions of the parts labelled 1-7. [7]

d) HIV is a sexually transmitted disease. State and Explain:

- Microorganism that causes HIV
- Other modes of transmission
- Signs and symptoms
- Treatment and preventive measures [10]

[TOTAL: 25]