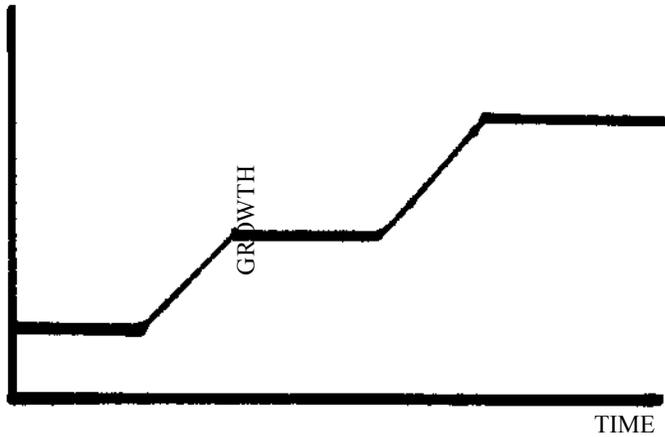


SECTION A (40 MARKS)

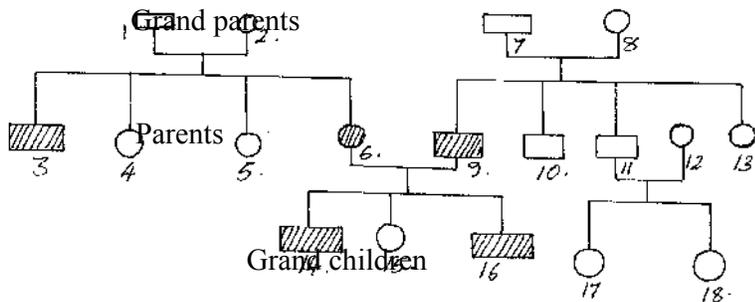
Answer all Questions in this section.

1. The graph below represents the growth pattern of animals of certain phylum



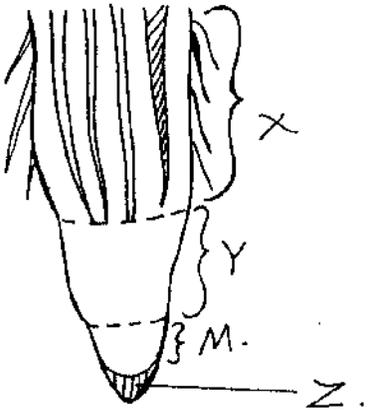
- (a) What phylum is it likely to be? (1Mark) *Trk*
- (b) Give one reason for your answer. (1Mark) *Trk*
- (c) Explain the growth pattern (3marks) *Trk*
- (d) Name the hormone which controls growth in these animals. (1Mark) *Trk*
- (e) Describe problems associated with exoskeleton to an insect. (2 Marks) *Trk*

2. The diagram below shows family tree squares represent males and circles represent Females. Normal individuals are represented by un-shaded diagrams while individuals who show genetically-controlled defect are indicated by shaded diagrams.

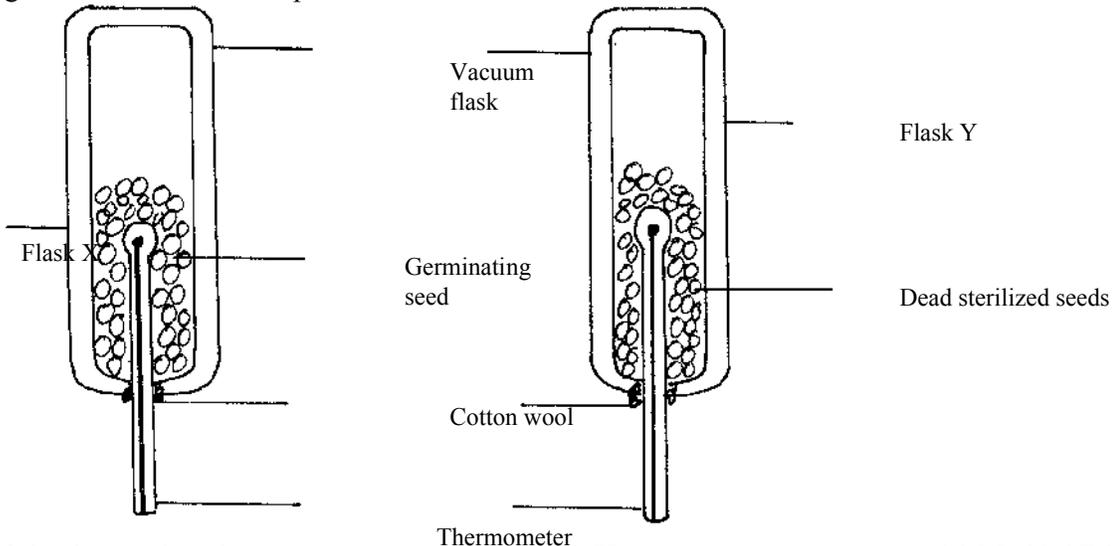


- (a) Suggest the name given to this family tree (1 Mark) *Trk*
- (b) In which of the grandparents is this genetically-controlled defect likely to have developed and by what process (2 Marks) *Trk*
- (c) Assume that genetically-controlled defect was haemophilia show the genotypes of the following
 - (i) Grandparents
 - (ii) Couple 11 and 12
- (d) Give reason why marriage between closely related relatives is discouraged. (1 Mark) *Trk*
- (e) Why are haemophilic females rare in human population? (1mk) *Trk*

3. The diagram below shows section of the plant. Examine it and answer the following Questions



- (b) Identify the section of the plant above. (1 Mark) *Trk*
 - b) Identify parts labelled X, Y and Z
 - c) State how section M is adapted to its function. (3 marks) *Trk*
 - d) Name the hormone that affects activities of cells in region Y. (1 mark) *Trk*
4. A group of students set up the apparatus below to investigate a physiological process. Temperature changes were recorded for a period of one week.



- (a) Explain observations in temperature reading in flask X. (1 Mark) *Trk*
 - Give a reason (2 Marks) *Trk*
 - b) Why are micro-organisms killed in boiled beans. (2 marks) *Trk*
 - c) Why is the mouth of the flasks plugged using cotton wool. (1 Mark) *Trk*
 - d) Why were flasks inverted upside down? (1 Mark) *Trk*
 - e) Why is the experiment carried out in a vacuum flask? (1Mark) *Trk*
5. Examine the following classification of organisms:

Organisms	Lion	Maize	Dog
Kingdom	anamalia	Plantae	Animalia
Phylum/Division	Chordata	Angiospermae	Chordata
Class	Mammalia	Monocotyledone	Mammalia
Order	Carnivora	Graminales	Carnivora
Family	Fetidae	Graminae	Felidae
Genus	Panthera	Zea	Canis
Species	Leo	Mays	Familiaris

- (i) Identify organisms that are not related (2Marks) *Trk*
 Organism
 Reasons
- (ii) Identify organisms which are closely related (2Marks) *Trk*
 Organism
 Reasons
- (iii) Give two reasons why maize is classified in class monocotyledonae. (2 Marks) *Trk*
- (iv) Describe how a lion is adapted to its mode of feeding. (2 Marks) *Trk*

SECTION B (40 MARKS)

Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided

6. The table below shows the effects of pH on the percentage rate of protein breakdown in the gut of an adult human.

PH	Rate of protein Breakdown
1	9
1.5	10
2.0	11
3.5	9.5
5	7
7	5
8	1
9	0
10	0
11	0
12	0
13	0

- (a) Plot a graph of rate of protein breakdown against pH. (6 Marks) *Trk*
- (b) Name the enzyme whose activity is being investigated. (1 mark) *Trk*
 Reason (1 Mark) *Trk*
- (c) (i) The enzyme named in (b) above is secreted in which form? (1 mark) *Trk*
 (ii) Give reason. (1 Mark) *Trk*
- (d) (i) Name the chemical compound that provides optimum pH for the named enzyme
 In the alimentary canal (1 Mark) *Trk*
 (ii) State two other functions of the chemical compound in c(ii) above (2 Marks) *Trk*
- (e) State and explain two structural adaptations of the alimentary canal where the enzyme being investigated is found. (4 Marks) *Trk*
- (f) Account for the enzymatic activity therein pH 8 and 13. (2 Marks) *Trk*
- 7(a) Citing specific examples. State and explain characteristics of gaseous exchange structures or respiratory surfaces in mammals. (8 Marks) *Trk*
- (b) In tabular form, describe the process of exhalation in man. (11 Marks) *Trk*
- (c) Which part of the brain controls breathing? (1 Mark) *Trk*
8. Discuss various economic importance of
- (i) Bacteria (10 Marks) *Trk*
- (II) Fungi (10 Marks) *Trk*