## SECTION A: ANSWER ALL QUESTIONS (70MARKS)

- 1) What is the importance of biodiversity? (4marks)
- 2) During field activity, name the possible sampling methods you can use?

(7marks)

- 3) Differentiate between population and community. (2marks)
- 4) A quadrat measuring 25cm x 25cm was used to measure population abundance of barnacles on a rocky shore. Data was collected from 10 random placed quadrats.

Quadrat(1m <sup>2</sup> )	1	2	3	4	5	6	7	8	9	10
Number of	0	4	5	2	9	0	10	8	2	10
Darmacies										

Calculate the density per m<sup>2</sup> of the barnacles in the studied area. (4marks)

5) Identify two immunisable viral diseases in human and non-immunisable viral diseases.

## (3marks)

- 6) Suggest why:
  - a) Chloroplasts are moved around plant cells. (2marks)
  - b) White blood cells need to be able to move. (2marks)
- 7) Suggest why muscles cells contain a lot of mitochondria, whereas most fat storage cells do not. **(4marks)**
- 8) A horse skin cell contains 64 chromosomes. How many chromosomes are there in:
  - a) a horse brain cell **2marks**
  - b) a horse liver cell? **2marks**
  - c) How many chromosomes are there in a human red blood cell? **2marks**
- 9) The diagram below shows the respiratory system in a human. Label the structures A G. (7marks)



- 10) What characteristic features would you consider while constructing a dichotomous key of leaves? **(6marks)**
- 11) The diagram below shows the structure of a cell surface membrane



- a) Name the structures labelled A, B and C. (3marks)
- b) Describe the structure and function of the cell membrane and cell wall. (7marks)
- 12) The diagrams below illustrate one model of enzyme action



- a) Name the part of the enzyme labelled A. (1 mark)
- b) Explain how this model can account for enzyme specificity. (2marks)
- c) With reference to this model, explain the effect of a competitive inhibitor on an enzyme catalyzed-reaction. **(4marks)**
- 13) List the adaptations of alveoli that make them suitable for gaseous exchange. **(6marks)**

## SECTION B: ANSWER ANY THREE QUESTIONS (30MARKS)

## 14) Complete the table referring to plant hormones. /10marks

Plant	growth	Site of synthesis	Effect in plant
substance			
Auxin			
Gibberellin			

Cytokinin	
Abscissic acid	
Ethene	

15) The table below shows the rate of an enzyme reaction at a range of temperature:

Temperature / °C	Mass lost by /mg	reactants	Rate of mass: to	reaction=	loss	in
10	5					
20	10					
30	40					
40	80					
50	20					

- a) Fill that table with the values of the rate of reaction and plot a graph of rate at different temperatures (use x-axis for temperature).
  (5marks)
- b) Calculate Q10 at 30°C. (2marks)
- c) Explain what happen between 20 and 30°C, and between 40 and 50°C. **(3marks)**

16)Identify each cell structure or organelle from its description below.

(10marks)

- a) Containing enzymes that break down unwanted materials.
- b) manufactures ribosomes
- c) site of protein synthesis
- d) can transport newly synthesized protein round the cell
- e) manufactures ATP in animal and plant cells
- f) controls the activity of the cell, because it contains the DNA
- g) carries out photosynthesis
- h) can act as a starting point for the growth of spindle microtubules during cell division i) contains chromatin
- j) two organelles each bounded by two membranes (an envelope)

17)Mr. Green lives in one of the slums in a certain city. He prepares and sells chapattis on street. He is usually very clean, but one morning, he is late for work so he does not bother to wash his hands after visiting the toilet. That day he prepares 400 chapattis all of which are sold. Few hours later, his customer

Sandra suffered from a disease with the following signs and symptoms: severe diarrhea, excessive loss of water leading to dehydration, and vomiting. Five days later, all his customers were rushed and admitted in hospital due to the same problem.

- a) Suggest the disease that Mr. Green's customers were suffering from and what caused the disease. **(2marks)**
- b) Name three ways this disease might be spread around city.(3marks)
- c) Suppose you were the health officer for the area in town with such a problem. What steps would you take to prevent the disease from spreading further? **(3marks)**
- d) House flies are described as vectors. Describe how houseflies transmit diseases to humans. **(2marks)**

18)Observe carefully the given chart that represents growing root.



- a) Identify the names of parts labelled by letters A, B, C, D and area X. **(5marks)**
- b) In the table list the differences between primary growth and secondary growth. **(3marks)**
- c) Describe briefly what the wood is made of and its major function.(2marks)