

1. (a) Explain how the electron microscope has contributed to the present and advanced knowledge of the cell. (5 marks)
- (b) How is the structure of the cell surface membrane adapted for the movement of substances in and out of the cell? (5 marks)
- (c) (i) State the cell theory (4 marks)
(ii) What are the structural differences between plant and animal cells? (3 marks)
- (d) Give the adaptations of the mitochondrion to its functions. (3 marks)
-
2. (a) Define the active site of an enzyme (2 marks)
- (b) What properties do enzymes have that enable them function as catalysts.? (5 marks)
- (c) Enzyme activity is influenced by the fact that they are protein in nature. Describe the factors which can influence the protein nature and its activities. (8 marks)
- (d) Explain why enzymes controlled reactions take place in small steps. (5 marks)
-
3. (a) Describe the process that occurs from the time the pollen grain lands on the stigma of a flower to the time the seed is formed in a flowering plant (10 marks)
- (b) What is:
- (i) Budding (2 marks)
- (ii) Parthenogenesis (2 marks)
- (iii) Cloning (2 marks)
- (c) Differentiate between sexual and asexual reproduction (4 marks)
-
4. (a) Waste management in most towns and cities in Cameroon on open lands is poor, resulting in pollution..
- (i) What effects do garbage deposition have on the population of the areas? (5 marks)
- (ii) How can the situation be remedied? (5 marks)
- (b) Explain what you understand by the following ecological terms:
- (i) Global warming (5 marks)
- (ii) Endangered species (5 marks)
-
5. (a) What are the properties of the lungs that make them good respiratory surfaces? (4 marks)
- (b) How is oxygen in the environment made available to the cells in the body of man. (6 marks)
- (c) Using named examples, distinguish between the following terms:
- (i) single and double circulation (5 marks)
- (ii) open and closed circulation (5 marks)
-
6. (a) Define the following terms as used in biotechnology:
- (i) Fermentation (2 marks)
- (ii) Genetic fingerprinting (2 marks)
- (b) Differentiate between batch fermentation and continuous fermentation (5 marks)
- (c) State the stages that are involved in a typical genetic engineering process. (5 marks)
- (d) What are the advantages and disadvantages of genetic engineering? (6 marks)
-
7. (a) Draw a well labeled diagram of the mammalian ear. (8 marks)
- (b) Describe how the ear functions in balance. (8 marks)
- (c) How is chemical transmission different from nervous transmission? (4 marks)
-
8. (a) Define the following terms as used in genetics:
- (i) Pure breeding
- (ii) Linked Genes
- (iii) Lethal genes
- (iv) Incomplete dominance
- (v) Dominance (5 marks)
- (b) State Mendel's Principles of
- (i) Segregation
- (ii) Independence Assortment (2 marks)
- (c) In a breeding program using guinea pigs, a breeder crossed a pure breeding long-haired brown and a pure breeding short-haired black guinea pig. All the F1 offspring were short-haired black guinea pigs. The breeder decided to self-cross all the F1 offspring in order to observe the phenotypes in the F2 generation. If the characteristics under observation are not linked, explain the genetics of these crosses using appropriate proportions of offspring produced at each stage of the crossing. (13 marks)

END