VCD/ 9/12/23 BOTANY - II SEMESTER I MARKS-100 DURATION - 3 HRS

Note:

1. **All the questions are compulsory.**
2. **Draw neat & suitable diagrams wherever necessary.**
3. **Figures to the right indicate full marks.**

Q 1. A. Choose the correct option & rewrite the statements: 10 Marks

1. Fluid mosaic model is explained in .....
   a.Chloroplast b.Endoplasmic reticulum c.Cell wall d.Plasma membrane
2. In Bacteria, the cell wall is composed of .....
   a.Cellulose b.Peptidoglycan c. Chitin d. Sugars
3. _____ is a linear, unbranched polymer, consisting of straight polysaccharide chains made of glucose units
   a.Cellulose b.Glycoprotein c.Megafibril d. Peptidoglycan
4. _____ convert the dead and decaying complex organic materials into simple components in the ecosystem.
   a. Decomposers b. Carnivorous c. Herbivorous d. Producers
5. in the food chain, only _____ percent Energy transfers during each successive trophic level.
   a. 1 b. 5 c. 10 d. 15
6. Select the producer organism amongst the following:
   a. Zooplanktons b. Phytoplanktons c. Crustaceans d. Mammals
7. Which one of the following is an Edaphic Abiotic Factor?
   a. Sunlight b. Precipitation c. Temperature d. Rocks
8. The checkerboard used to calculate the phenotype and genotype ratio of the crosses is called _____.
   a. Punnett square b. Bar graph c. pedigree d. pie chart
9. The ratio of dominant epistasis is _____.
   a. 9:3:3:1 b. 12:3:1 c. 3:1 d. 1:2:1
10. The cross between the F1 progeny and a dominant or a recessive parent is called _____.
    a.Test cross b.Back cross c.Selfing d.Reciprocal cross

Q 1. B Answer the following in one or two sentence/s each 10 Marks

a. Mention the two types of Endoplasmic Reticulum
b. Define the First Law of Thermodynamics applicable to ecosystems
c. Give a function of Decomposers with its examples.
d. What is epistatic gene and hypostatic gene?
e. Give the three laws of inheritance postulated by Sir Gregor Johann Mendel.

Q 2. Answer the following questions: (ANY TWO) 20 Marks

a. With the help of a neat and labelled diagram, describe the structure of a typical eukaryotic plant cell.
b. Describe the structure and composition of plant cell wall

c. Describe the structure of Chloroplast with help of neat and labelled diagram
d. Explain the structure of Endoplasmic reticulum with the help of a neat and labelled diagram and add a note on its function.

Q 3. Answer the following questions: (ANY TWO) **20 Marks**

a. Explain the Biotic factors of the ecosystem in detail.
b. Describe the Upright energy flow model with a neat and labelled schematic diagram.
c. Define the Ecological Pyramid and add a note on its types.
d. Discuss about Food Web and give its types.

Q 4. Answer the following questions: (ANY TWO) **20 Marks**

a. A true breeding homozygous tall plant was crossed with a true breeding homozygous dwarf plant. Tall is dominant over short. All the F1 progenies were Tall.
    1. Compute suitable cross to show the F1 progenies- phenotype and genotype.
    2. The F1 X F1 were crossed to raise the F2 - compute a cross to find the phenotype and genotype ratio of the F2 generation.
b. Which are the alleles involved in the ABO blood group system in Human population . Perform the following crosses to Identify the blood group of the offsprings .
    1. Father is B (Heterozygous) and the Mother is A (Homozygous)
    2. Father is AB and the Mother is AB
    3. Father is A (heterozygous) and the Mother is O
c. A Geneticist was studying fruit colour in summer squashes, white fruit colour (W) is dominant over yellow fruit colour (w) and disk shaped fruit (D) is dominant over long shaped fruit (d). Perform a cross between a heterozygous white fruit with disk shape, female plant with a heterozygous white fruit with a disk shape male. Compute the phenotypic ratio of the above cross using dihybrid cross.
d. Explain gene interactions with a suitable cross for comb shape in domestic fowls.

Q 5. Write Short Notes on: (ANY FOUR) **20 Marks**

a. Prokaryotic cell
b. Structure of Plasma membrane
c. Abiotic factors of Ecosystem
d. Detritus Food Chain
e. Monohybrid cross with an example
f. Define:- Dominant allele, Heterozygous, Recessive allele, phenotype, Genotype.

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