8marks

1. Explain Calvin Cycle.

2. Give an account of Glycolysis. Where does it occur? What are the end products? Trace the fate of these products in both aerobic and anaerobic respiration.

3.Explain the reactions of Kreb's Cycle.

4.Give a brief account of the tools of recombinant DNA technology.

5.Explain briefly the various processes of recombinant DNA technology?

6.You are a Botanist working in the area of plant breeding. Describe the various steps that you will undertake to release a new variety.

7.Describe Tissue culture technique. What are the advantages of tissue culture over conventional method of plant breeding in crop improvement programmes.

4marks

Transport in plants :

1. What is meant by plasmolysis? How is it practically useful to us?
2. Transpiration is a necessary evil. Explain.
3. Define and explain water potential.
4. How does ascent of sap occur in tall trees.

Enzymes :

1. Write briefly about enzyme inhibitors.
2. Explain the mechanism of enzyme action.
3. Explain different types of co-factors.

Mineral nutrition

1. Explain the nitrogen cycle giving relevant examples.
2. Explain the steps involved in the formation of root nodule.

Photosynthesis in Higher Plants :

1. Draw a neat labelled diagram of chloroplast.
2. Tabulate any eight differences between C3 and C4 plants/cycles.
3. Describe in brief photorespiration.

Plant growth and regulation :

1. Write a note on agricultural/horticultural applications of auxins.
2. Explain any 4 physiological effects of cytokinins in plants.
3. Write a short note on seed dormancy.
4. Write the physiological responses of gibberellins in plants.
5. Write the physiological processes regulated by ethylene

Bacteria :

1. Explain the process of conjugation in bacteria.
2. How are bacteria classified on the basis of number and distribution of flagella?

Principles of Inheritance and Variation :

1. Explain incomplete dominance with example.
2. Mention the advantages of selecting pea plant for experiment by Mendel.
3. Define and design a test cross.
4. Write a brief note on chromosomal mutations and gene mutatior
5. Explain law of dominance using a monohybrid cross.
6. Explain the co-dominance with example.

Viruses :

1. Explain the structure of T-even bacteriophages.

2. Explain the structure of TMV.

3. What is ICTV? How are Viruses named?

Molecular Basis of Inheritance :

1. What are the differences between DNA and RNA.

2. Write the important features of genetic code.

3. Draw the schematic/diagrammatic representation of lac operon.

4. Write briefly on nucleosomes.

5. How many types of RNA polymerases exist in cells? Write the functions.

Biotechnology and its applications :

1. Give a brief account on Bt cotton.

2. Name the nematode that infects the roots of tobacco plants. Name the strategy adopted to prevent this infestation. (Meloidogyne incognita)

3. What are biosafety issues concerned with genetically modified

4. List out the beneficial aspects of transgenic plants.

2marks

Transport in Plants

1. How does guttation differ from transpiration?
2. What are apoplast and symplast?
3. What are porins? What role do they play in diffusion?
4. Differentiate between osmosis and diffusion.
5. Define water potential? What is water potential of pure water?
6. What are source and sink?
7. What are physical properties of water responsible for ascent of sap through xylem?
8. Compare the imbibing capacities of pea pea and wheat seeds.

Mineral Nutrition :

1. Explain the role of pink colour pigment in the root nodule of legume plants. What is it called?
2. Write the balanced equation of nitrogen fixation?
3. Define hydroponics?

Enzymes

1. Who proposed the lock and key hypothesis and induced fit hypothesis?
2. Distinguish between apoenzyme and co-factor.

Photosynthesis in Higher Plants :

1. Where does the photolysis of H_2O occur? What is its significance.
2. Define the law of limiting factors proposed by Blackman.
3. What is the primary CO_2 acceptor in C3 plants? What is the first compound formed in C4 pathway?

Plant Growth and Development :

1. How does ABA brings about closure of stomata under stressful conditions?
2. Define the terms quiescence and dormancy.
3. What is meant by bolting? Which hormone causes bolting?

Bacteria :

1. What is conjugation? Who discovered it in which organism?
2. What is transformation? Who discovered it in which organism?
3. What is transduction? Who discovered it in which organism.
4. What are pleomorphic bateria? Give one example.

Viruses :

1. Mention the differences between virulent phages and temperate phages.
2. What is nucleopolyhedrovirus being used for nowadays?
3. What is the shape of TMV? What is its genetic material?

Principles of Inheritance and variations :

1. Who proposed the chromosomal theory of inheritance?
2. What is the genetic nature of wrinkled phenotype of pea seeds.
3. What is point mutation? Give an example
4. Explain the terms phenotype and genotype.
5. What is the cross between f1 progeny and recessive parent? How is it useful?