

**CC/M/EXAM.
2020**

BOTANY

Paper—II

Time : 3 hours]

[Full Marks : 250

Note : Question Nos. **1** and **5** are compulsory and out of the remaining, any **three** are to be attempted choosing at least ONE question from each section. The number of marks carried by question/part is indicated against it.

SECTION—A

1. Answer *any five* of the following questions in about 150 words each : 10×5 = 50

- (a) Write a note on DNA fingerprinting.
- (b) What is PHYLIP?
- (c) Write a note on cytoplasmic inheritance.
- (d) Write about the root nodules of leguminous plants.
- (e) Write a note on Wildlife Sanctuaries of India.
- (f) Write briefly on DNA double helix model.
- (g) Write about the volatile toxic substances accumulated in the fruit tissues.

2. Answer the following questions :

- (a) Give an account of structural organization of the special types of chromosomes and their significance. 12+8=20
- (b) Define photosynthetic apparatus. Briefly describe how photosynthetic apparatus helps in the mechanism of electron transport along with both the electron transport systems. 3+12=15
- (c) What are the characteristics and functions of an ecosystem? Give an account of a pond ecosystem. 15

3. Answer the following questions :

- (a) Define and discuss the structural and functional aspects of endoplasmic reticulum and mitochondria with appropriate diagrams. 10+10=20
- (b) Give an account of all the Environment Protection Acts of India. Put your opinion how these acts are helpful in protecting our environment. 13+2=15
- (c) How India is divided phytogeographically? Describe the regions in detail. 15

4. Answer the following questions :

- (a) What is mutation? What are the different methods of induced mutation? Write down the role of induced mutation in crop improvement. 2+10+8=20
- (b) What is Genetic Engineering? Give a brief account of the process and also discuss its practical utility. 2+7+6=15
- (c) Define photoperiodism and mention the plant types on the basis of critical day length. Briefly describe the physiology of flowering. 2+3+10=15

SECTION—B

5. Write short notes on *any five* of the following :

10×5=50

- (a) PCR techniques
- (b) Nucleus as the brain of a cell
- (c) Nitrogen fixation
- (d) Endemism
- (e) Invasive species
- (f) Cytoplasmic inheritance
- (g) Gibberellins

6. Answer the following questions :

- (a) What is hybridization? What are the different hybridization methods applied for crop improvement? Describe them. 3+17=20
- (b) Describe the most widely accepted theory of upward translocation of water in plants. Justify the acceptability of the theory. 10+5=15
- (c) What is succession? Describe the process of succession in an aquatic ecosystem. 4+11=15

7. Answer the following questions :

- (a) Describe different steps of pentose phosphate pathway breakdown of sugar. 20
- (b) Explain why the eukaryotic organisms are so much more complex than that of the prokaryotic ones. 15
- (c) What is biodiversity? What are its functions and causes of biodiversity degradation? What steps should be taken for biodiversity conservation? 2+4+4+5 =15

8. Answer the following questions :

- (a) What is eutrophication? What are the causes and effects of water pollution? Also mention the measures to be taken to prevent or control water pollution. 20
- (b) With suitable diagrams, describe how gametes are formed from diploid cells. How is this process different from that of meiosis cell division? 15
- (c) Define enzymes and co-factors. Discuss the classification and nomenclature system of enzymes. 15

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