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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

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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

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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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