

BOTANY
Paper – ITime Allowed : **Three Hours**Maximum Marks : **200****Question Paper Specific Instructions**

Please read each of the following instructions carefully before attempting questions :

*There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.*

*Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.*

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

*Answers must be written in **ENGLISH** only.*

Neat sketches may be drawn, wherever required.

SECTION A

Q1. Answer the following keeping your answers brief and to the point : **8×5=40**

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|-----|---|---|
| (a) | Distinguish between Prokaryotes and Eukaryotes. | 8 |
| (b) | What is Aflatoxin ? State its importance. | 8 |
| (c) | Explain the pigments observed in Rhodophyceae. | 8 |
| (d) | Discuss Ammonification, Nitrification and Denitrification, stating the names of bacteria responsible for each step. | 8 |
| (e) | Explain the developmental stages of <i>Pinus</i> male gametophyte. | 8 |

- Q2.** (a) Describe Algal Phylogeny. 10
- (b) Describe sporophyte development in bryophytes with suitable illustrations. 10
- (c) Discuss the molecular basis of plant-pathogen interaction, with examples. 10
- (d) Describe the role of bacteria in pharmaceuticals, agriculture and industry. 10
- Q3.** (a) Distinguish between Simple and Cleavage Polyembryony. With the help of labelled diagrams, compare the embryogeny of *Pinus* and *Cycas*. 10
- (b) Enumerate the sporophytic and gametophytic features of *Psilotum*. Comment on its systematic position. 10
- (c) Discuss the role of transduction in genetic recombination in bacteria. 10
- (d) Characterize the different types of Mycorrhiza with examples. Discuss its role in agriculture and forestry. 10
- Q4.** (a) Define Telome. Discuss Zimmermann's telome concept citing examples from major pteridophytic groups. 10
- (b) Describe briefly the symptoms and control measures of black stem rust of wheat. Name the causal organism. Why is it known as macrocyclic rust? 10
- (c) Distinguish between Lytic and Lysogenic cycles. Explain briefly the steps of multiplication process of T4-bacteriophage by lytic cycle. 10
- (d) Discuss the role of amphibious plants in the evolution of land plants. 10

SECTION B

Q5. Answer the following keeping your answers brief and to the point : 8×5=40

- (a) Explain with examples, the different provisions of author citations. 8
- (b) Discuss Vavilov's Centres of diversity. 8
- (c) Give five botanical names of fibre yielding plants and mention the parts from where fibres are obtained. 8
- (d) Discuss in brief, the distinctive flora of the Mesozoic Era. 8
- (e) Give a concept on the Inflorescence of Musaceae. 8

Q6. (a) Discuss the basic outline of classification according to the principles of Bentham and Hooker. State its merits and demerits. 6+4=10

(b) Compare the floral characteristics of Fabaceae and Asclepiadaceae. Give floral diagrams and name an economically important plant of each of these families. 6+2+2=10

(c) What do you mean by Palynology ? Give an account of application of palynology. 2+8=10

(d) Define Ethnobotany. Describe the role of ethnobotany in the discovery of modern drugs, citing examples. 1+9=10

Q7. (a) Write the botanical names, active constituents and uses of five plants of economic importance belonging to each of the families Fabaceae, Rosaceae and Brassicaceae. 15

(b) Discuss the different levels of biodiversity. Comment briefly on *in situ* and *ex situ* conservation of biodiversity. State the role of cryopreservation in the conservation of plant biodiversity. 6+5+4=15

(c) What is Apomixis ? Discuss different apomictic developmental pathways with suitable illustrations. Give a note on genetics of apomixis. 1+5+4=10

- Q8.** (a) What is meant by Anomalous Secondary Growth ? Give a descriptive account on comparison of normal and anomalous secondary growth in dicot with examples and illustrations, wherever necessary. 2+13=15
- (b) Define Botanical Garden and state how it differs from other gardens. Name two internationally reputed botanical gardens. Discuss the role of an ideal botanical garden in education. 2+2+6=10
- (c) Write notes on the following : 5×3=15
- (i) Micropropagation : Definition, stages and application 5
 - (ii) Callus Culture : Origin and application 5
 - (iii) Protoplast Fusion : Origin, merits and demerits 5