

2022

BOTANY

PAPER-I

Time Allowed — 3 Hours

Full Marks — 200

*If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.*

*Answers may be given either in English or in Bengali or in Nepali but all answers must be in one and same language.*

**Group-A**

Answer any four of the following.

1. Write brief notes on any four of the following: 10×4=40
  - (a) Mycotoxins with special reference to Aflatoxins
  - (b) Sporopollenin—structure and function
  - (c) Auxospore formation in Centrales and Pennales
  - (d) Anamorphic fungi and parasexuality
  - (e) Pathotoxins—definition, criteria and examples
  - (f) Bryophytes in plant succession and pollution monitoring
2. Answer any four of the following: 10×4=40
  - (a) Description and Phylogenetic importance of Progymnosperms
  - (b) Chemical structure and difference between gram(+) and gram(–) bacteria
  - (c) Types of mycorrhiza and its role in agriculture and forestry
  - (d) Telome concept and its significance in the origin of different groups of Pteridophytes
  - (e) Application of genetic recombination in medicine and industry
  - (f) Diagrammatic representation of disease cycle of Late blight of potato and its control methods
3. Explain any four of the following: 10×4=40
  - (a) Post fertilization changes in angiosperms
  - (b) Salient features of Orchidaceae with special reference to floral structure and advanced features
  - (c) In situ and ex situ biodiversity conservation
  - (d) Adaptive anatomical features of Hydrophytes and Xerophytes
  - (e) Define endemism with examples. Briefly discuss the vegetation of Eastern Himalaya's.
  - (f) Types of vascular bundles in plants
4. Comment on any four of the following: 10×4=40
  - (a) Types of stomata with examples and diagram
  - (b) Organization of shoot apex with special reference to histogen and tunica-carpus concept

28915

- (c) Monophylletic, polyphylletic and paraphylletic groups in taxonomy
- (d) Apospory and apogamy
- (e) Algal toxins
- (f) Ultrastructure of flagella and its differences with pili

5. Discuss *any four* of the following:

10×4=40

- (a) Types of endosperm development with example
- (b) Hydrosere concept
- (c) Phytoremediation— types and examples
- (d) Define 'Red Data Book'. Write a note on importance of Indian Herberia and Botanical Gardens.
- (e) Describe the various types of fruits with example.
- (f) Name the origin, composition and uses of (i) Agaragar, (ii) Algin and (iii) Carrageenan.

## Group-B

Answer *any two* questions.

- 6. (a) Discuss the origin of heterospory with examples. How heterospory led to seed habit in plants?  
(b) Briefly describe the bacterial genome structure. What are plasmids? Mention its role in Biotechnology. (5+5)+(4+2+4)=20
- 7. (a) Describe the structural features and evolutionary significance of *Williamsonia oldhamia*.  
(b) What are mechanical tissues in plants? Discuss the principles of distribution of mechanical tissues in plants. (6+4)+(5+5)=20
- 8. (a) Describe the ultrastructure and chemical composition of plant cell wall.  
(b) Describe the salient features of the family Fabaceae. Name at least four economically important genera of the family. Distinguish the sub-families in accordance to Bentham & Hookers system of classification. (5+5)+(4+2+4)=20

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**For guidance of WBCS Prelims , Main Exam and Interview by WBCS Gr A Officers/ Toppers, WBCS Prelims and Main Mock Test (Classroom & Online), Optional Subjects, Study materials, Correspondence Course etc. Call WBCSMadeEasy™ at 8274048710 / 8585843673 or mail us at [mailus@wbcsmadeeasy.in](mailto:mailus@wbcsmadeeasy.in). Download WBCS MADE EASY app from play store. (We offer guidance and mock test for Clerkship, Miscellaneous and other WBPSC Exams. too by WBCS MADE EASY LITE) Visit [www.wbcsmadeeasy.in](http://www.wbcsmadeeasy.in)**