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(8 pages)

Reg. No. :

Code No. : 5531

Sub. Code : WBOSE 41

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2025.

Fourth Semester

Botany

Skill Enhancement Course III — BOTANY FOR
COMPETITIVE EXAMINATIONS

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is an acellular microorganism?
- (a) Bacteria (b) Virus
(c) Fungi (d) Protozoa

2. Which of the following plants is used in the production of sugar?
- (a) *Zea mays*
(b) *Saccharum officinarum*
(c) *Theobroma cacao*
(d) *Ricinus communis*
3. Which of the following is a bacterial plant pathogen?
- (a) *Puccinia graminis*
(b) *Xanthomonas campestris*
(c) *Meloidogyne incognita*
(d) Tobacco mosaic virus
4. Which group of plants is known as amphibians of the plant kingdom?
- (a) Algae (b) Bryophytes
(c) Pteridophytes (d) Gymnosperms
5. Which of the following is a gymnosperm?
- (a) Mango (b) Cycas
(c) Banana (d) Rice

6. Which era is known as the "Age of Reptiles"?
- (a) Paleozoic (b) Mesozoic
(c) Cenozoic (d) Precambrian
7. Which type of chromosome is known as a "giant chromosome"?
- (a) Polytene chromosome
(b) Metacentric chromosome
(c) Submetacentric chromosome
(d) Telocentric chromosome
8. Which biomolecule is responsible for storing genetic information?
- (a) Carbohydrates (b) Proteins
(c) Lipids (d) Nucleic acids
9. Which nucleic acid is double-stranded and stores genetic material?
- (a) DNA (b) RNA
(c) tRNA (d) rRNA
10. Where is auxin primarily synthesized in plants?
- (a) Roots
(b) Mature leaves
(c) Shoot apical meristem
(d) Xylem
11. Where does crossing over occur during meiosis?
- (a) Prophase I
(b) Metaphase I
(c) Anaphase II
(d) Telophase II
12. Which term refers to the smallest unit of mutation?
- (a) Recon (b) Muton
(c) Cistron (d) Exon
13. Which of the following is an example of an abiotic ecological factor?
- (a) Herbivory (b) Temperature
(c) Predation (d) Mutualism

14. Which sanctuary in Tamil Nadu is famous for bird conservation?
- (a) Vedanthangal Bird Sanctuary
 - (b) Indira Gandhi Wildlife Sanctuary
 - (c) Kalakkad Mundanthurai Tiger Reserve
 - (d) Sathyamangalam Wildlife Sanctuary
15. Where does nitrogen fixation primarily occur?
- (a) In plant roots
 - (b) In flowers
 - (c) In leaves
 - (d) In stems

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Explain the reproduction of bacteria.
- Or
- (b) Explain the different types of viruses based on their genetic material.

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17. (a) Describe the types of sexual reproduction in algae.
- Or
- (b) Summarize the general characteristics of lichens.
18. (a) Explain the classification of lipids.
- Or
- (b) Describe the different phases of mitosis and its significance.
19. (a) Enumerate the factors affecting translocation in phloem.
- Or
- (b) Explain the significance of crossing over in genetic recombination.
20. (a) Explain the role of producers, consumers, and decomposers in an ecosystem.
- Or
- (b) Describe the nitrogen cycle and its ecological significance.

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PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

21. (a) Explain the structural and biochemical defense mechanisms in plants against pathogens.

Or

- (b) Write the botanical name, family name, useful part and uses of any two oil yielding and sugar yielding plants.

22. (a) Discuss the economic importance of algae.

Or

- (b) Explain the methods used in fossil study and dating techniques.

23. (a) Explain the structure and function of chloroplasts.

Or

- (b) Describe the structural and functional significance of giant chromosomes.

24. (a) Describe the C3 pathways.

Or

- (b) Enumerate the major types of chromosomal aberrations.

25. (a) Describe the classification of plant communities in synecology.

Or

- (b) Discuss about biogeochemical cycle.