BOTANY (P.G.)

[CBCS]

M.Sc. Third Semester End Examination-2024

(Regular & Supplementary Paper)

PAPER-BOT-302

Full Marks: 40 ***Time: 02 Hrs.***

The figures in the right hand margin indicate marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

(Use separate answer script for each unit)

Unit – I

[Marks – 20]

[Plant Physiology]

Group - A

1. Answer any FOUR questions of the following: 1x4=4

a. Which two plant hormones are used to produce parthenocarpic fruits in the horticultural industry?

b. What is programmed cell death?

c. Differentiate between stratification and vernalization.

d. Torus is a special structure found in the xylem pit of Gymnosperms. Explain its function in relation to conduction of water.

e. Name a plant hormone which promotes the acquisition of desiccation tolerance in developing seed.

f. What are the three different pathways for cell to cell movement of water in plants?

Group - B

2. Answer any TWO questions of the following: 4x2= 8

a. What is nastic movement and how is it different from tropic movement? Give examples of nastic and tropic movements in plants. [2+2]

b. Distinguish between channel proteins and carrier proteins. Explain Nernst potential for distribution of ions across a membrane with the help of equation. [2+2]

c. What are the right sensitive steps in the carbondioxide fixation of Calvin cycle. [2+2]

d. Differentiate between phytochrome and cryptochrome. Explain how red and far-red light controls the biological activity of phytochrome. [2+2]

Group - C

3. Answer any ONE question of the following: 8x1=8

a. Explain the dual nature of RUBISCO enzyme. Why is photorespiration considered to be a wasteful process and how is photo-respiration different from dark respiration? Explain how C4 cycle serves as an evolutionary adaptation against photorespiration. 2+3+3

b. What is dormancy and how is it different from quiescence? What are the different types of dormancy? Explain different methods to overcome seed dormancy. 2+3+3

Unit – II
[Marks – 20]
[Plant Physiology, Biochemistry& Molecular Biology]

Group - A

1. Answer any FOUR questions of the following: 1x4=4

a. What is meant by mutarotation?

b. What are proteoglycans?

c. Name two fibrous proteins.

d. What is secondary metabolite?

e. What is active site?

f. Distinguish between simple and conjugated sugars.

Group - B

2. Answer any TWO questions of the following: 4x2= 8

a. Describe the scavenging activity of reactive oxygen species.

b. Draw and describe the basic structure of nitrogenase enzyme. 2+2=4

c. Compare between competitive and non-competitive inhibition of enzymes.

d. Write a short note on the biological activities of phenols. 2+2

Group - C

3. Answer any ONE question of the following: 8x1=8

a. Describe the Shikimic Acid pathway for the bio-synthesis of Secondary metabolites. What is Lineweaver Burke Plot. 6+2

b. Write a short note on i) Fischer projection and ii) Lipidomics concept. 4+4
