2024/TDC (CBCS)/EVEN/SEM/
BOTDSC/GE-401T/033

TDC (CBCS) Even Semester Exam., 2024

BOTANY

(4th Semester)

Course No. : BOTDSC/GE-401T

(Plant Physiology and Metabolism)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *three* questions from the following : 1×3=3

(a) What is the unit of water potential?

(b) What is the water potential of flaccid cell?

(c) What is transpiration pull?

(d) What do you mean by root pressure?

2. Answer any *one* question from the following : 2

(a) Give examples of two anti-transpirants.

(b) What is guttation? In which types of plant the process of guttation can be seen?

3. Answer any *one* question from the following : 5

(a) What is water potential? What are the components of water potential? How is water potential measured? 1+2+2=5

(b) What is transpiration? Write about the factors affecting transpiration. What is anti-transpirant? 1+3+1=5

UNIT—II

4. Answer any *three* questions from the following : 1×3=3

(a) Who proposed pressure flow model?

(b) Write the function of phosphorus in plants.

(c) Define active transport.

(d) Name one ion transport pump.

5. Answer any *one* question from the following : 2

(a) Differentiate macro- and micro-nutrients.

(b) What are the components of phloem sap?

6. Answer any *one* question from the following : 5

(a) With the help of suitable diagram, describe the process of phloem loading and unloading.

(b) Write notes on the following : 2½×2=5

(i) Active transport

(ii) Essential elements in plant growth

UNIT—III

7. Answer any *three* questions from the following : 1×3=3

(a) What is the first stable product of C_3 cycle?

(b) What are the final products of anaerobic respiration in plant?

(c) Write the function of RuBP.

(d) Where does oxidative phosphorylation take place?

8. Answer any *one* question from the following : 2

(a) Why is Krebs' cycle also called TCA cycle?

(b) Write the function of RuBisCO.

9. Answer any *one* question from the following : 5

(a) What is photorespiration? Describe the process of photorespiration in plants. 1+4=5

(b) Describe the process of carbon fixation in C_4 plants. What is bundle sheath? 4+1=5

UNIT—IV

10. Answer any *three* questions from the following : 1×3=3

(a) What is 'nif' gene?

(b) Name one denitrifying bacteria.

(c) Name one plant hormone that helps in cell division.

(d) Name one synthetic auxin.

11. Answer any *one* question from the following : 2

(a) Write two functions of ABA.

(b) Write the importance of nitrogenase enzyme in nitrogen fixation.

12. Answer any *one* question from the following : 5

(a) Write about the physiological role and mode of action of auxin.

(b) Write about the process of assimilation of ammonia in plants. Write the importance of ammonia assimilation in plants. 3+2=5

UNIT—V

13. Answer any *three* questions from the following : 1×3=3

(a) Name the hormone responsible for flowering.

(b) Which physiological process influences flowering?

(c) What is photomorphogenesis?

(d) Pr form of phytochrome interconverted to Pfr form at which wavelength of light?

14. Answer any *one* question from the following : 2

(a) Give example of one each with scientific name of short-day plant and long-day plant.

(b) What do you mean by day-neutral plant? Give example.

15. Answer any *one* question from the following : 5

(a) Write the characteristic features of short-day plant and long-day plant. What is critical day length? 2+2+1=5

(b) Write the role of phytochrome in photomorphogenesis.

★★★