Total number of printed pages = 7

63/1(SEM-5)CC12/BOTHC5126

2024

BOTANY

(HONOURS)

Paper : BOTHC5126

(Plant Physiology)

Full Marks : 60

Pass Marks : 24

Time : 3 hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer: ***(any five)*** 1×5=5

   (a) In plants, transpiration plays an important role in

   (i) Ascent of sap

   (ii) Translocation of mineral salts

   (iii) Regulation of temperature

   (iv) All of above.

Contd.

(b) Stomata open at night in

(i) C_3 plants

(ii) CAM Plants

(iii) C_4 plants

(iv) None of above

(c) Main force for ascent of sap in higher plants is

(i) Root pressure

(ii) Atmospheric pressure

(iii) Transpiration pull

(iv) Capillary force

(d) Water potential is equal to

(i) T_s+0.P

(ii) =T.P.

(iii) ×1'P+Y

(iv) Zero

(e) Phenyl mercuric acetate (PMA) results in

(i) Reduced photosynthesis

(ii) Reduced transpiration

(iii) Reduced respiration

(iv) Killing of plants

(f) Hormone primarilly connected with cell division is

(i) IAA

(ii) NAA

(iii) Cytokinin/Zeatin

(iv) Gibberellic acid

(g) Abscisic acid treatment results in

(i) Root elongation

(ii) Stomatal closure

(iii) Stem elongation

(iv) Leaf expansion

(h) The chromophore of phytochrome is attached to its polypeptide through

(i) Nitrogen atom

(ii) Phosphorus atom

(iii) Oxygen atom

(iv) Sulphur atom

(i) Which of the following hormone can replace vernalization?

(i) Auxin

(ii) Ethylene

(iii) Cytokinins

(iv) Gibberellins

(j) Fungal hyphae and pollen tube exhibit

(i) Chemotropic movements

(ii) Phototropic movements

(iii) Chemotactic movements

(iv) Phototactic movements

2. Answer the following questions : ***(any five)*** 2×5=10

(a) What is plasmolysis? What are its advantages?

(b) Difference between the terms hypotonic and hypertonic.

(c) What do you mean by turgor and turgid?

(d) What is ribulose diphosphate?

(e) Explain the meaning of C3 pathway.

(f) What are the main factors of seed dormancy?

(g) What is the role of phototropin in stomatal movement?

3. Answer the following questions : ***(any five)*** 5×5=25

(a) Explain the mechanism of transpiration and the factors affecting the transpiration.

(b) Explain osmosis and osmotic pressure. Describe how these are related to the life of plant.

(c) Write a detailed note on C4 carbon cycle.

(d) What is the role of macro and micro nutrients in plants?

(e) Explain the process of 'source-path-sink transport.'

(f) What are growth regulators? Explain the biosynthesis and assay of auxins.

(g) Winter varieties, when planted in spring, do not produce flowers or mature grains within the span of a flowering season. Explain.

(h) *Nicotiana tabacum*, a Short Day Plan, when exposed to more than critical period of light fails to flower. Explain.

(i) What is photomorphogenesis? What are the factors affecting photomorphogenesis?

4. Answer the following question: ***(any two)*** 10×2=20

(a) What is transpiration? Describe the mechanism of stomatal transpiration. "Transpiration is a necessary evil". Justify the statement. How plants control the excessive loss of water. 2+5+3=10

(b) What is a phytohormone? How many kinds of them are known to you? Describe at least two member of each class of phytohormones mentioning its structure and functions. 2+3+5=10

(c) What is seed dormancy? What are the roles of carbon-dioxide and oxygen in airtight storage that affect the storage life and dormancy of seeds? 2+8=10

(d) What are phytochromes? Give the physiochemical properties of phytochrome. With special reference to flowering give a general account on physiological roles of phytochromes. 2+3+5=10
