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3 (Sem-5/CBCS) BOT HC 2

2024

**BOTANY**

(Honours Core)

Paper : BOT-HC-5026

(Plant Physiology)

Full Marks : 60

Time : Three hours

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

1. Answer the following questions :  $1 \times 7 = 7$
- (a) \_\_\_\_\_ is a constituent element of chlorophyll.
  - (b) Aquaporins are \_\_\_\_\_.
  - (c) \_\_\_\_\_ is a necessary component of nitrogenase enzyme in plants.
  - (d) Chemically kinetin is known as \_\_\_\_\_.
  - (e) Phototropins are \_\_\_\_\_ protein.

Contd.



(f) Many microbial species produce water soluble pigments that serve as chelating agents, termed as \_\_\_\_\_ .

(g) In proton pump \_\_\_\_\_ enzyme is involved.

2. Answer the following questions :  $2 \times 4 = 8$

(a) Differentiate between apoplast and symplast.

(b) Differentiate between chlorosis and etiolation.

(c) Write the differences between Pr and Pfr forms of phytochrome.

(d) What are ABC transporters ? Mention their role in solute transport.

3. Write briefly on **any three** of the following :  $5 \times 3 = 15$

(a) Jasmonic acid

(b) Phototropins

(c) Pressure potential

(d) Role of ABA in environmental stress

(e) Donnan equilibrium

4. Answer the following questions : (**any three**)  $10 \times 3 = 30$

(a) What are gibberellins ? Describe the physiological effects of gibberellins.  $2 + 8 = 10$

(b) Describe the structure and function of cryptochrome.

(c) Describe the active and passive absorption of water by roots in plants.

(d) What is florigen concept ? Describe its role in stimulating flowering in different types of photoperiod sensitive plants.  $4 + 6 = 10$

(e) Describe the starch-sugar hypothesis and  $K^+$  pump theory of stomatal movement.  $5 + 5 = 10$

(f) What is seed dormancy ? Mention different types of seed dormancy. Describe the causes and mechanisms of breaking of seed dormancy.  $1 + 2 + 7 = 10$