

Total number of printed pages-7

3 (Sem-5/CBCS) BOT HC 2

2022

**BOTANY**

(Honours)

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 **any seven** from the following :

1×7=7

(a) The apoplast and symplast of a plant are :

- (i) living and dead parts respectively
- (ii) both living parts
- (iii) both dead parts
- (iv) dead and living parts respectively

Contd.





(b) The sieve tubes contain several types of fibrillar proteins called

- (i) G-proteins
- (ii) S-proteins
- (iii) P-proteins
- (iv) X-proteins

(c) Foolish seedling disease of rice is caused by the fungus \_\_\_\_\_.

*(Fill in the blank)*

(d) Chemically kinetin is known as \_\_\_\_\_.

*(Fill in the blank)*

(e) The two components of florigen are :

- (i) kinetin and anthesin
- (ii) gibberellin and anthesin
- (iii) gibberellin and brasinosteroid
- (iv) anthesin and ethylene

(f) Calmodulin contains

- (i) calcium and magnesium
- (ii) calcium and sugar
- (iii) calcium and lipid
- (iv) calcium and protein

(g) In water stressed plant, the cells will have

- (i) relatively more negative water potential
- (ii) less negative water potential
- (iii) no water potential
- (iv) None of the above

(h) Aquaporins are formed in cell membrane by

- (i) integral membrane proteins
- (ii) peripheral membrane proteins
- (iii) phospholipids
- (iv) None of the above

(i) Blocking of a xylem vessel or tracheid by an air bubble is called as

- (i) cavitation
- (ii) embolism
- (iii) hydraulic discontinuity
- (iv) None of the above



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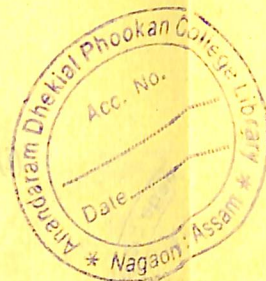
(j) Cohesive force of water is due to presence of

- (i) hydrogen bonds between water molecules
- (ii) covalent bonds between water molecules
- (iii) hydrogen bonds between water and components of xylem walls
- (iv) None of the above

(k) Phototropins are \_\_\_\_\_ proteins.  
(Fill in the blank)

(l) Magnesium is an important component of

- (i) chlorophylls
- (ii) phaeophytin
- (ii) cytochromes
- (iv) All of the above



2. Write briefly on **any four** of the following :  
2×4=8

- (a) Sand culture
- (b) Difference between active and passive absorption

(c) Cytokinin

(d) Antitranspirants

(e) Adsorption

(f) Difference between apoplast and symplast

(g) Phytochrome genes

(h) Chelating agents

3. Write short notes on **any three** of the following :  
5×3=15

(a) Richmond and Lang effect

(b) Source - sink relationship

(c) Hydroponics

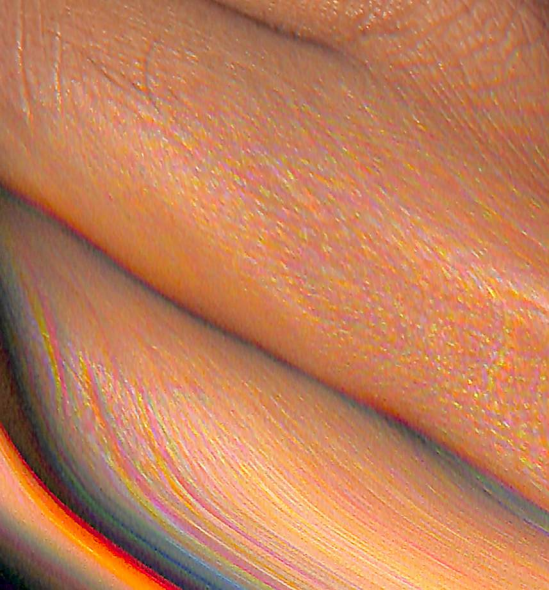
(d) Co-transport

(e) Donnan equilibrium

(f) Proton ATPase Pump

(g) Photoinductive cycle

(h) Jasmonic acid





4. Answer **any three** of the following :

10×3=30

(a) What is water potential ? Describe its various components. 3+7=10

(b) Discuss the mechanism of absorption of mineral salts by plants. How does it differ from absorption of water ?

6+4=10

(c) Write about the occurrence, availability, physiological role and deficiency symptoms of Nitrogen in plants.

1+1+4+4=10

(d) What is phloem transport ? Describe the pressure flow model to explain the mechanism of phloem transport.

3+7=10

(e) What is phytohormone ? Mention the different kinds of phytochrome. Describe *at least one* member of each class of phytohormone with particular reference to its structure and function.

2+2+3+3=10

(f) What is florigen concept ? Describe its role in stimulating flowering in different types of photoperiod sensitive plants.

7+3=10

(g) What are the criteria of essentiality of elements ? Narrate briefly the various functions of essential elements.

5+5=10

(h) Describe the starch-sugar hypothesis and K<sup>+</sup> pump theory of stomatal movement.

5+5=10

