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3 (Sem-6) BOT M3

2020

**BOTANY**

(Major)

Paper : 6:3

**(Plant Physiology)**

Full Marks : 60

Time : Three hours

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

1. Answer the following questions : 1×7=7

- (a) Who proposed  $K^+$  exchange hypothesis for opening and closing of stomata?
- (b) Which mineral element is commonly present in "Cytochrome" and "Ferredoxin"?
- (c) Name the phytohormone associated with cell division.

Contd.



- (d) Name the stress hormone in plants that functions during draught.
- (e) What is scarification ?
- (f) What will happen if the transpiration exceeds the amount of water absorbed ?
- (g) What is the main role of photosystem-II ?

2. Answer the following questions in brief :  
2×4=8

- (a) Chemoautotrophs.
- (b) What are Xenobiotics ? Why are they recalcitrant ?
- (c) What is Vernalization ? Who coined the term Vernalization ?
- (d) What is Bioassay ? Name *any two* bioassays for auxins.

3. Answer **any three** of the following :  
5×3=15

- (a) Explain the process of photorespiration.

- (b) Write a brief note on Donnan Equilibrium.
- (c) Describe the role of  $K^+$  in opening of stomata.
- (d) Discuss methods of inducing or breaking of seed dormancy.
- (e) Describe the apoplast and symplast pathway.

4. (a) What do you understand by "ascent of sap" ? What are the different theories that have been put forward to explain the mechanism of ascent of sap ? Explain the transpiration pull and cohesion-tension theory. 2+3+5=10

**OR**

Describe the role of cytochrome-pump hypothesis in relation to the entrance of mineral salts. What do you mean by salt respiration ?  
7+3=10

(b) What do you mean by translocation of organic solutes ? Describe the process with the help of Munch's mass flow hypothesis.  
2+8=10



**OR**

What do you mean by Emerson Enhancement effect? Describe the existence of two pigment systems in the light reaction of photosynthesis.

5+5=10

- (c) What is Senescence? Explain briefly the sequential and simultaneous or synchronous senescence.

2+8=10

**OR**

What do you understand by water potential? Describe the relationship among metric potential, solute potential, pressure potential and water potential.

2+8=10