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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 : $1 \times 7 = 7$
- (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 Xenebiotics ? 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

OR

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

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