

Roll No.

E-530

**M. Sc. (Second Semester) (Main/ATKT)
EXAMINATION, May-June, 2021**

BOTANY

Paper Third

(Plant Physiology)*Time : Three Hours]**[Maximum Marks : 80***Note :** Attempt all Sections as directed.**Section—A**

1 each

(Objective/Multiple Choice Questions)**Note :** Attempt all questions.

Choose the correct answer :

- When the stomata are opening; we observe the following changes in the guard cells :
 - OP increases TP decreases
 - OP and TP increase
 - OP decreases TP increases
 - OP and TP decrease

- Which of the following is required for the formation of flowers in plant ?
 - adequate oxygen
 - adequate moisture
 - definite photoperiod
 - definite temperature
- Minimum numerical relation between an enzyme molecule and a substrate molecule is :
 - 1 : 10
 - 1 : 100
 - 1 : 1000
 - 1 : 5
- Molybdenum is essential :
 - For RUBISCO of cyanobacteria
 - For Nitrogenase enzyme
 - For RUBISCO of eukaryotes
 - For transaminase activity
- If some solute is dissolved in pure H₂O, the solution has fewer H₂O and concentration of H₂O decreases, increasing its :
 - Osmotic pressure
 - Solute concentration
 - DPD
 - All of the above

P. T. O.

6. When two solutions A and B having WP-12 bars and – 7 bars respectively are separated by semi-permeable membrane, which of the following would occur ?
- (a) Solvent moves from A to B
 - (b) Solvent moves from B to A
 - (c) No movement of solvent occurs
 - (d) Solutes moves from A to B
7. Water potential is highest in the :
- (a) atmosphere
 - (b) soil
 - (c) leaves
 - (d) root
8. Apoplastic movement of water refers to :
- (a) movement of water from one cell to another
 - (b) movement of water from intercellular spaces
 - (c) movement of water through endodermis
 - (d) All of the above
9. The condition under which transpiration is most rapid is :
- (a) excess of water in soil
 - (b) high humidity
 - (c) low velocity of wind
 - (d) low humidity and high temperature

P. T. O.

10. An enzyme acts by :
- (a) reducing the energy of activation
 - (b) increasing the energy of activation
 - (c) decreasing the pH
 - (d) increasing the pH
11. The most abundant protein enzyme found in plants is :
- (a) RUBP carboxylase
 - (b) PEP carboxylase
 - (c) Catalase
 - (d) Copper protein
12. Biotic-stress includes living disturbances as :
- (a) Fungi
 - (b) Insects
 - (c) Both (A) and (B)
 - (d) Green plants
13. In a flaccid cell :
- (a) $DPD = OP$
 - (b) $DPD = TP$
 - (c) $DPD = OP - TP$
 - (d) None of the above

[5]

E-530

14. Most of the water taken up by the plant is :
- (a) split during photosynthesis as a source of electrons and hydrogens
 - (b) lost by transpiration through stomata
 - (c) absorbed by cells during elongation
 - (d) incorporated directly into organic material
15. When a signal molecule arrives at a G-protein linked receptor, the G-protein :
- (a) becomes deactivated
 - (b) binds to the signal molecule
 - (c) becomes activated
 - (d) binds with a Ca^{2+}
16. With respect to plasma-membrane most enzyme receptors are :
- (a) single pass
 - (b) seven pass
 - (c) entirely on the surface
 - (d) multipass
17. The pigment that plays a key role in photo-morphogenesis :
- (a) chlorophyll
 - (b) phytochrome
 - (c) cytochrome
 - (d) anthocyanin

P. T. O.

[6]

E-530

18. The light which stimulates flowering in an inducible plant :
- (a) is perceived by the apical meristem
 - (b) is perceived throughout the plant
 - (c) is perceived by the leaves
 - (d) None of the above
19. Light stimulates seed germination, promotes chlorophyll synthesis and leaf expansion :
- (a) Photoperiodic
 - (b) Photomorphogenesis
 - (c) Phototropism
 - (d) Photosynthesis
20. Calmodulin activates protein kinases in to a transient increase in :
- (a) t-AMP
 - (b) Calcium ions
 - (c) DAG
 - (d) NO

Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt all questions in two or three sentences.

1. What is simplest ?
2. Expand HR and SAR.

[7]

E-530

3. What is ribosome ?
4. Give main functions of cryptochrome.
5. Define inhibitors in enzyme action.
6. Define facilitated diffusion.
7. What is receptors in signal transduction ?
8. Define hypotonic solution.

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt all questions in 75 words.

1. What is mass-flow ?
2. What is non-competitive inhibition ?
3. Write the role of plasmolysis in the life of plants.
4. Define passive transport.
5. What is G-proteins ?
6. Write the role of mycorrhiza.
7. Signify salinity stress.
8. What is metal toxicity ?

Section—D

5 each

(Long Answer Type Questions)

Note : Attempt all questions in 150 words.

1. Describe phloem loading and unloading.

Or

Write a note on active and passive solute transport.

P. T. O.

[8]

E-530

2. Write a brief note on calcium-calmodulin cascade.

Or

Sensor regulation in bacteria.

3. What is stress hormone ? How are it work ?

Or

Describe water stress.

4. Write a note on photoperiodism.

Or

Describe the role of P_r and P_{fr} form of phytochromes.

E-530