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D 111104 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2024

(CBCSS)

Botany

BOT 3C 07—PLANT PHYSIOLOGY, METABOLISM AND BIOCHEMISTRY

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A (Short Answer Type Questions)

Answer any **four** *questions.*
Each question carries 2 weightage.

1. How does the polarity of water molecules influence their behaviour in a liquid state ?
2. What is turgor pressure, and why is it important for plant cells ?
3. What is the nitrogen cycle, and what are the key processes involved in it ?
4. What is Michaelis-Menten equation and its significance in enzyme kinetics ?
5. Differentiate between absorption and action spectra in photosynthesis.
6. Classify carbohydrates and give examples of simple sugars and compound carbohydrates.
7. What factors can influence the rate of translocation in the phloem ?

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

Answer any **four** *questions.*
Each question carries 3 weightage.

8. What is transpiration, and what are its ecological and physiological significance in plants ?
9. Briefly explain the mechanism by which roots absorb mineral ions from the soil, emphasizing active transport.
10. Briefly explain the process of biological nitrogen fixation.
11. Classify amino acids based on polarity and discuss their properties. How do these properties influence the structure and function of proteins ?

Turn over

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12. Describe the roles of auxins, gibberellins, and cytokinins in seed germination.

13. What are the structural and functional roles of carbohydrates in living organisms ?

14. Describe the two phases of glycolysis.. How is glycolysis regulated ?

(4 × 3 = 12 weig

Section C (Long Essay Type Questions)

Answer any **two** *questions.*
Each question carries 5 *weightage.*

15. What are isoenzymes, and how do they differ from each other in terms of structure and fun
Give the examples of isoenzymes and their physiological roles.

16. Describe the activation and entry of fatty acids into metabolic pathways. How does beta-oxid
occur in both saturated and unsaturated fatty acids ?

17. Describe the genetic control of plant development. How do genes and regulatory elements influ
the development of different plant structures and functions ?

18. Discuss the mechanism of action of phytochrome and its role in regulating gene expression.

(2 × 5 = 10 weight