MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION
B.Sc.(Hons.) Agriculture

Semester	: III	Term	: First	Academic Year	: 2024-25
Course No.	: BIOCHEM 231	Title	: Fundamentals of Plant Biochemistry and Biotechnology		
Credits	: 3(2+1)				
Day & Date	: Wednesday, 09.10.2024	Time	: 09:00 to 12:00 hrs.	Total Marks	: 80

Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
2. All questions from SECTION 'B' are compulsory.
3. All questions carry equal marks.
4. Draw neat diagram wherever necessary.

SECTION 'A'

Q.1 a) Define Biomolecules. Enlist and write their characteristics.

b) What are Lipids chemically? Explain the significance of lipids.

Q.2 a) Define Carbohydrates. Classify polysaccharides on the basis of composition with appropriate examples.

b) Enlist different properties of water and write its importance.

Q.3 a) Define Fatty acids. Give their classification with suitable examples.

b) Define Biochemistry and write the importance of Biochemistry in Agriculture.

Q.4 a) Define Essential amino acids. Classify amino acids on the basis of composition with suitable examples.

b) Explain in brief TCA cycle involved in aerobic respiration.

Q.5 a) What is Protein? Classify them on the basis of composition with suitable examples.

b) Define Nucleic acids and explain the types of RNA.

Q.6 a) Write in detail the mechanism of enzyme action.

b) Describe β-oxidation of fatty acids with generation of ATP molecules.

Q.7 a) Differentiate between Reducing sugar and Non-reducing sugar.

b) Define Enzyme. Classify them as per IUB System, 1961.

Q.8 a) What is PCR? Give in detail about steps involved in PCR.

b) What is meant by Molecular marker? Enlist various molecular markers.

Q.9 a) What is Somatic embryogenesis? Give factors affecting somatic embryogenesis.

b) Write in brief about artificial/ synthetic seed.

Q.10 a) What is Transgenic plant? Give its applications.

b) Discuss about concept and applications of cryopreservation in Agriculture.

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SECTION 'B'

Q.11 Define the following terms:

1. Restricted enzyme
2. Buffer
3. Somaclonal variation
4. Mutarotation
5. Micropropagation
6. Cellular totipotency
7. Cybrid
8. pH

Q.12 Do as directed:

1. Give an example of reducing sugar.
2. _____ scientist involved in the development of Structural Biochemistry.
3. Write the contribution of Karl Wilhelm Scheele.
4. List-out sulphur containing amino acids (Any one).
5. Who suggested the term 'Protein'?
6. Who is known as the 'Father of Plant Biotechnology'?
7. Virus-free plants are obtained by which tissue culture method?
8. Give long form of SSR.

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