

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hons.) Agriculture

Semester	: III (New)	Term	: I	Academic Year	: 2019-20
Course No.	: BIOCHM 231	Title	: Fundamentals of Plant Biochemistry and Biotechnology	Total Marks	: 80
Credits	: 3(2+1)	Time	: 09.00 to 12.00		
Day & Date	: Monday, 04.11.2019				

- 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 diagrams wherever necessary.

SECTION "A"

- Q.1 a) Write the importance of biochemistry in agriculture.
b) Explain in brief the chemical and physical properties of water.
- Q.2 a) Define biomolecule. Enlist them and write their general characteristics.
b) Classify carbohydrates along with suitable examples.
- Q.3 a) Explain in brief the properties of monosaccharides.
b) Write on structural organization of protein.
- Q.4 a) What are nucleic acids? Write their types of along with structural components.
b) Write in detail the mechanism of enzyme action.
- Q.5 a) Give the importance of lipids.
b) Enlist the steps involved in glycolysis.
- Q.6 a) Give outline of TCA cycle.
b) Explain β oxidation of fatty acids. Write the amount of energy generated from complete oxidation of fatty acids.
- Q.7 a) Classify amino acids with suitable examples.
b) Explain the term photosynthesis. List out the photosynthesis pigments. What is Hill's reaction?
- Q.8 Define micropropagation. Explain in detail stages and applications of micropropagation.
- Q.9 Enlist the different methods of gene transfer and describe in brief the *Agrobacterium* mediated gene transfer.
- Q.10 What is PCR? Describes the steps involved in PCR.

SECTION "B"

Q.11 Do as directed.

- 1) Give one example of enzyme which is involved in catalysis of oxidation-reduction reactions.
- 2) Draw the structure of sucrose.
- 3) Mention Michaelis-Menten equation.
- 4) What do you understand by hydrolytic rancidity?
- 5) What is saponification?
- 6) What is the pH requirement for tissue culture media?
- 7) Give the contribution of Guha and Maheshwari?
- 8) What do you mean by Callus?

Q.12 Define the following terms.

- | | |
|-------------------------|-----------------------------|
| 1) Lipids | 2) Allosteric enzyme |
| 3) pH | 4) Nucleotides |
| 5) Nitrate assimilation | 6) Marker Assisted Breeding |
| 7) Synthetic seed | 8) Cybrid |

