B.Tech Even Semester Examination, May, 2025

Agricultural Engineering

(6th Semester)

Course No: AE-B01

[Elective-III (Food Chemistry and Microbiology)]

Full Marks: 70
Pass Marks: 28
Time: 3 hours

Note:

1. Attempt any five questions taking one from each unit.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

UNIT-I

1. What do you mean by water activity? Briefly explain the measurement of water activity and sorption isotherm. [2+12]

2. Define Lewis structure of water. Briefly explain the 6 important properties of water. [2+12]

UNIT-II

3. (i) What is lipid? Briefly explain the classification of lipids. [1+7]

   (ii) Define saponification reaction. Explain the various constituents present in unsaponifiable matter of lipids. [2+4]

4. (i) What do you mean by protein? Briefly explain the structure of amino acids. [7]

(ii) Explain the protein classification based on solubility and chemical composition. [7]

UNIT-III

5. (i) Define food science and food chemistry. [2]

(ii) Write the short notes (any four) [12]

(a) Cellulose (b) Saccharides

(c) Macromolecules (d) Isomerism

(e) D vs L configuration

6. (i) Briefly explain the sensory properties of sugars. [4]

(ii) Define emulsion. Write the role of emulsifier. Briefly explain the properties of emulsifiers. [10]

UNIT-IV

7. What is phycology? Briefly explain the 6 importance of micro-organism in foods. [2+12]

8. (i) Define binary fission and binomial system. [2]

(ii) Write the short notes (any four) [12]

(a) Virus (b) Bacteria (c) Molds

(d) Parasitic organisms (e) Yeast

UNIT-V

9 Explain the common bacterial groups and their importance in foods. [14]

10. (i) Define coagulation. Enumerate the electrical properties of sols with diagram. [7]

(ii) Write the short notes on

i. Aggregations method of sols

ii. Bredig's Arc method of sols [7]

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