

Exam. Code : 107405

Subject Code : 2233

**B.Sc. (Biotechnology) 5th Semester
BIOPROCESS ENGINEERING—A**

Paper—BT-5

Time Allowed—Three Hours] [Maximum Marks—40

Note :— Attempt ALL questions from Section A; any FIVE from Section B and any TWO from Section C.

SECTION—A (Marks : 1×8=8)

1. Write briefly on these :
 - (a) Chemical Engineering
 - (b) Biochemical Engineering
 - (c) Bioprocess Engineering
 - (d) Fermentation Technology
 - (e) Yield co-efficient
 - (f) Effector Molecule
 - (g) Del factor
 - (h) pH.

SECTION—B (Marks : 5×4=20)

2. What is Michaelis-Menton constant ? Derive it and graphically explain.

3. Write five physical laws which are applicable on biological samples.
4. Write five chemical laws which are applicable on biological samples.
5. What is specific growth rate ? How it is related to doubling time ? Derive it.
6. Diagrammatically discuss external feed back bioreactor.
7. Discuss the media sterilization kinetics.
8. Explain the substrate inhibition kinetics.
9. What is growth yield co-efficient ? How it is dependent on different media ?

SECTION—C (Marks : 2×6=12)

10. What is mass transfer co-efficient ? Discuss the depth filter kinetics for air sterilization.
11. How does temperature effect on bioproduct synthesis ? Discuss.
12. Derive the Monod growth equation. Explain the saturation constant.
13. What is enzyme ? Discuss the oxidoreductase enzymatic reaction.