(Set-PS)

B.Tech-5th (CE)

Fundamentals of Biochemical Process

Full Marks : 70

Time : 3 hours

Answer six questions including **Q.No.1** which is compulsory.

The figures in the right-hand margin indicate marks.

Symbols carry usual meaning.

1. Answer *all* questions : 2×10

(*a*) Define the term microbiology.

(*b*) Define Growth Yield and the other various Yield Coefficients used in cell culture.

(*c*) How does internal feedback system work for biomass ?

(*d*) Enlist the different types of spargers used for aeration in fermenter.

(*e*) What do you mean by the term bioreactor ?

(*f*) Define anaerobic and aerobic process.

(*g*) What are the physical parameters which affect microbial growth ?

(*h*) What do you mean by enzymatic hydrolysis of lipids ?

(*i*) Describe the structure and function of probangotic cell with the help of diagram.

(*j*) Write a short note on membrane separation process.

2. (*a*) List the different techniques used for purification process and explain any one in brief. 5

(*b*) Explain the different types of membrane process used in bioprocess engineering. 5

3. (*a*) State the functions of each part of a fermenter with the help of a schematic diagram. 5

(*b*) What do you understand by continuous fermentation ? Explain the term wash out in a single stage continuous culture. 5

(*Continued*)

4. (*a*) List the different types of reactors used in biochemical process. 5

(*b*) Discuss aerobic and anaerobic fermentation process give an examples. 5

5. (*a*) Discuss in brief techniques used for measurement and control of dissolved oxygen in aerobic processes. 5

(*b*) Describe the advantages of continuous sterilization over batch process. 5

6. (*a*) What do you understand by immobilized enzyme ? Describe any one method for immobilization of enzyme. 5

(*b*) Write a note on activated sludge process. 5

7. Explain cell disruption and discuss precipitation method for separation and recovery of product/ cells. 10

8. Describe the important and measurement and control parameters for optimum operation of bioreaction and support your answer with neat diagram. 10

(*Turn Over*)

Or

What is the raw material for production of ethanol by fermentation ? Describe its manufacture from widely available raw material. How you would obtain absolute alcohol ? *10*