M.Sc. (Semester—II) (CBCS Scheme) Examination

BIOTECHNOLOGY

Paper—VI (2 BTB 2)

(Bioprocess Engineering and Technology)

Time—Three Hours] [Maximum Marks—100

Note :— (1) All questions are compulsory.

(2) All questions carry equal marks.

(3) Draw suitable diagram wherever necessary.

1. Discuss various approaches for strain improvement of industrial organisms. Elaborate any one approach involving genetic engineering with suitable example. 20

OR

Discuss the importance of stock culture in industry. Elaborate different approaches used in industry for their preservation. 20

2. (a) Differentiate batch culture and continuous culture. 5

(b) Discuss 'Z' value. 5

(c) Discuss the sources of industrial media for low cost high volume products. 5

(d) Write the importance of pilot plant in fermentation industry. 5

OR

(p) Discuss fed batch culture and comment upon its advantages and disadvantages. 5

(q) Describe the characteristics of fermentation broth. 5

(r) Discuss continuous sterilization process and comment upon its merits and demerits. 5

(s) Discuss the sources of industrial media for high cost low volume products. 5

3. Draw schematic diagram and discuss salient features and possible applications :

(a) Bubble-column reactor. 5

(b) Rotary biological contractor. 5

(c) Packed bed reactor. 5

(d) Plug-flow reactor. 5

OR

Draw schematic diagram and explain :

(p) pH control system. 5

(q) Foam control system. 5

(r) Radial and axial impellers. 5

(s) Baffles in stirred tank reactor. 5

4. Explain various physical and chemical methods for cell disintegration, for maximum recovery of intracellular products. 20

OR

Write an essay on the use of chromatographic techniques in recovery and purification of product. 20

5. (a) Discuss mass transfer in solid state fermentation. 5

(b) Discuss submerged liquid culture. 5

(c) Comment upon general characteristics of solid state fermentation. 5

(d) Discuss advantages of solid state fermentation. 5

OR

(p) Describe economical applications of solid state fermentation. 5

(q) Compare mass transfer in SSF and SLC. 5

(r) Describe limitations of solid state fermentation. 5

(s) What are the advantages of submerged liquid culture ? 5