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UG/5th Sem/Biot(H)/T/19

2019

B.Sc. (Honours)

5th Semester Examination

BIOTECHNOLOGY

Paper - C11T

[Bioprocess Technology]

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

1. Answer any *five* questions : 5×2=10
 - (a) Give examples of one fungal and one bacterial strain used for ethanol production. 1+1
 - (b) Define product yield and volumetric productivity. 1+1
 - (c) What is seed culture ? 2

[Turn Over]

(2)

- (d) Write the basic features of an ideal antifoaming agent. 2
- (e) Write down the limitations of continuous stirred tank reactor. 2
- (f) Write down the use of rotameter in a fermenter. 2
- (g) What are the advantages of fluidized bed bioreactor ? 2
- (h) Mention the procedure for sterilization of industrial fermenters. 2
2. Answer any *four* questions : 4×5=20
- (a) State the characteristic features of SSF. How does it differ from SmF ? Write the role of baffles in a fermenter. 2+2+1
- (b) Describe the attributes of an industrial strain. Give examples of one national and one international culture collection centers. 3+2
- (c) Describe the agitation system used in a bioreactor. How can the effluents from an industry be treated ? 2+3

(3)

(d) What is aspect ratio of a fermenter ? Give examples of two productions using SSF process. Define fermenter and bioreactor. 2+1+2

(e) What is fed-batch fermentation ? Write the difference between batch and fedbatch culture. Write down the advantages of airlift bioreactor. 1+2+2

(f) Describe a fermenter design required for ethanol production. Write a brief note on microbial production of single cell protein. 2+3

3. Answer any *one* question : 1×10=10

(a) Write short note : 4×2½

(i) Continuous fermentation

(ii) Trophophase and Idiophase

(iii) Scale-up process

(iv) Second generation bioethanol production

[Turn Over]

(4)

- (b) What is $K_L a$? Write its importance in fermentation process. Name the factors affecting $K_L a$. What are the advantages of computer aided process control ? 2+2+3+3
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