(31)

Exam.Code:0908
Sub. Code: 6704

1059

B.E. (Biotechnology) Fourth Semester

BIO-414: Industrial Bio-Technology

Max. Marks: 50

owed: 3 Hours

Attempt five questions in all, including Question No. I which is compulsory and selecting wo questions from each Unit.

x-x-x

Attempt the following:-

a) What is the role of a sparger in fermenter?

b) What is seed culture?

c) What do you mean by lyophillization?

d) Name the organism used for commercial production of streptomycin.

e) Differentiate between nucleotides and nucleosides.

f) Name two methods of preserving microbial strains.

g) Discuss the potential applications of proteases in different industries.

h) Give one example each of a primary metabolite and a secondary metabolite.

i) The koji process is
   i) Aerobic process
   ii) Anaerobic process
   iii) Submerged process
   iv) Steady-state process

j) Which of the following is the commonly employed adsorbent in immobilization?
   i) Calcium carbonate
   ii) Alumina
   iii) Celluloses
   iv) All of these (10x1)

UNIT – I

a) Define strain improvement. Briefly discuss the various approaches used for strain improvement.

b) What are different methods of culture preservation? Discuss any one in detail.

c) What is culture medium? Give different types of culture media with examples. (4,4,2)

a) What is a bioreactor? Briefly describe major categories of fermentations, their requirements and applications.

b) Write short notes on:-
   i) Upstream processing
   ii) *In situ* recovers *of* products (6,4)

P.T.O.

IV. a) Discuss in brief:-

i) Differentiate between primary metabolites and secondary metabolites

ii) Process optimization

b) Name five microorganisms and their potential industrial applications. (5,5)

UNIT – II

V. a) What are broad and narrow spectrum antibiotics?

b) Draw a schematic diagram for streptomycin production.

c) Name the strain involved in commercial production of penicillin. How penicillin is recovered? (3,4,3)

VI. a) Discuss the production process of citric acid. Also enlist the microorganisms used.

b) Discuss in brief the factors affecting the production of dextran. (5,5)

VII. a) What are enzymes? Discuss their mechanism of action.

b) What is enzyme immobilization? Describe briefly the various methods of enzyme immobilization.

c) Define biotransformation. Explain its significance in biotransformation of steroids. (3,4,3)

x-x-x