Exam.Code:0908
Sub. Code: 6704

1019
B.E. (Bio-Technology) Fourth Semester
BIO-414: Industrial Bio-Technology

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Answer the following briefly:-

a) What is bioconversion?

b) Write two methods of preserving microbial strains.

c) Give differences between nucleosides and nucleotides.

d) What is fermentation?

e) Write two important applications' of protease enzyme.

f) What are microbial enzymes

g) Give two important prerequisites for preparation of a medium.

h) Which of the following have NOT been used in various bioconversions?

i) Unicellular bacteria

ii) Yeasts

iii) Actinomycetes

iv) Viruses

i) *Bacillus thuringiensis* is -used as

i) Insecticide

ii) Microbicidal agent

iii) Fungicide

iv) Rodenticide

j) _____ is the efficient method for producing energy from biomass. (10x1)

UNIT – I

II. a) Give in detail design of a fermenter.

b) Discuss different types of fermenters. (5,5)

P.T.O.

III. Write short notes on:-

a) Fed batch fermentation

b) Culture preservation

c) Synthetic media

d) *Saccharomyces*

e) Sparger (5x2)

IV. With a flow diagram explain the different steps in preparation of an ideal growth medium for production of biomass. (10)

UNIT – II

V. a) Write down the microbial production process for enzyme amylase.

b) Write down industrial applications of proteases. (5,5)

VI. a) What is microbial biotransformation? Discuss giving a suitable example.

b) Discuss the importance of dextran and carotene in industry. (5,5)

VII. a) Discuss the production process of organic solvents acetone and butanol.

b) Discuss various methods of immobilization of microbial enzymes (5,5)

x-x-x