

Exam Date & Time: 11-Mar-2022 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal Academy of Higher Education, Manipal MPharm Theory End-Semester Examinations.

Bioprocess Engineering and Technology [PBT-MPB103T]

Marks: 75

Duration: 180 mins.

SECTION - A

Answer all the questions.

Answer the following (10 marks x 5 = 50 marks)

- 1) Draw a neat labelled diagram of an industrial fermenter and describe Tower fermenter. (10)
- 2) Enlist the methods used for determination of Oxygen transfer rate. Discuss the gassing out techniques. (10)
- 3) Discuss the factors to be considered for recovery of fermented products citing examples. (10)
- 4) Define the term 'immobilization' of an enzyme. Discuss the principle, advantages and limitations of each immobilization method (10)
- 5) Discuss the production and recovery of Streptomycin. (10)

SECTION - B

Answer all the questions.

Answer the following (5 marks x 5 = 25 marks)

- 6) What are the different steps in the upstream processing? Enlist the reasons for preservation of industrial cultures and explain the various methods for preservation of industrially important microorganisms. (5)
- 7) Write a note on HVAC system and plenum ventilation. (5)
- 8) Describe the criteria and factors considered in inoculum development. (5)

- 9) State and derive Michaelis-Menten equation of enzyme kinetics. (5)
- 10) Biotransformation is considered as a better way than chemical conversion for modifying chemical compounds. Justify. (5)

-----End-----