

**Master's Degree Examination-November 2018
III Semester**

Class: II PG

Major: Biotechnology

Time: 3 Hours

Maximum Marks: 60

17MBTC16 Enzymes and Bioprocess Technology

Part-A

10X1/2=5

Choose the correct answer

- The enzymes involved in feedback inhibition are called
 - Holoenzymes
 - Allosteric enzymes
 - Apoenzymes
 - Coenzymes
- The molecule which acts directly on an enzyme to lower its catalytic is
 - Repressor
 - Inhibitor
 - Modulator
 - regulator
- The role of an enzyme in an enzyme-catalyzed reaction is to
 - bind transition state intermediate
 - ensure that the product is stable than substrate
 - making free energy changes for the reaction
 - Increase the rate at which substrate is converted to product
- The rate determining step of Michaelis-Menten kinetics is
 - The complex dissociation step to produce products
 - The complex formation step
 - The product formation step
 - None of the above
- The use of insulin hormone to purify its receptor is an example of
 - Gel filtration chromatography
 - Affinity chromatography
 - Ion exchange chromatography
 - Ligand mediated chromatography
- Which of the following method the proteins are separated on the basis of net charge
 - Gel filtration chromatography
 - Affinity chromatography
 - Ion exchange chromatography
 - Dialysis
- A fed-batch process is a
 - Closed system
 - Continuous system
 - Intermittently fed system
 - Biphasic system
- Which of the following is not a product of fermentation
 - Oxygen
 - Carbondaioxide
 - Ethanol
 - Lactate
- Which process is called product recovery
 - Upstream processing
 - downstream processing
 - Biological processing
 - Midstream processing
- The bench-top bioreactor comes under which type of bioreactor
 - Solid state bioreactor
 - Stirred tank bioreactor
 - Airlift bioreactor
 - Photo bioreactor

Part- B

5×4=20

Answer the following

Answer should not exceed 200 words or one page

- 11.a Define lock and key model and induced fit model of enzymes
(Or)
- 11.b Brief anote on kinetics of single substrate and multisubstrate enzymes.
- 12.a) Comment on Lineweaver–Burk plot and its uses in enzyme kinetics
(Or)
- 12.b) Briefly discuss enzyme regulation by covalent modifications with suitable examples
13. a) Explain affinity chromatography technique
(Or)
- 13.b) What are fluorescent protein tags? List some of its application
- 14.a) Explain about Air-lift fermenter
(Or)
- 14.b) Explain the process of batch and continuous culture
- 15.a What are Online measurements and Offline measurements in Bioprocess Control
(Or)
- 15b) Discuss the chemical and enzymatic methods of cell disruption for product recovery

Part-C

5×7 = 35

Answer the following

Answer should not exceed 600 words or three pages

- 16.a) Explain the Michaelis-Menten kinetics.
(Or)
- 16.b) Explain the enzyme kinetics of competitive and Noncompetotive inhibition
- 17.a) Describe the function and mechanism of lysozyme .
(Or)
- 17.b) Discuss acid and base catalysis reaction and its application.
- 18.a) Describe the different techniques used for enzyme immobilization.
(Or)
- 18.b) Describe the bioconversion processs using enzymes. Give examples
- 19.a) Discuss about the following Biorectors (i) Bubble column Biorector ii) Packed bed Bioreactor
(Or)
19. b) Give a detailed note on identification, screening of industrially important microorganism.
- 20.a) Describe about the recovery process and purification of fermented products in downstream processing.
(Or)
- 20.b) Discuss the important parameters that are required to be monitored and controlled in the fermentation process.