

M. Sc. DEGREE EXAMINATION - NOVEMBER 2017
BIOTECHNOLOGY
THIRD SEMESTER

COURSE : CORE
PAPER : ENZYME AND BIOPROCESS TECHNOLOGY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL QUESTIONS

(20 x 1 = 20)

- 1) Milk turning to curd is _____ type of enzyme action
- 2) Write any one role of Sparger.
- 3) Which of the following is the best definition of generation time?
 - A) The length of time it takes for lag phase.
 - B) The length of time it takes for a population of cells to double.
 - C) The maximum rate of doubling divided by the initial count.
 - D) The time it takes for nuclear division.
- 4) In Competitive inhibition, the inhibitor binds to _____ site of the protein.
- 5) Define inoculum size.
- 6) Define enthalpy.
- 7) Differentiate batch and fed batch culture technique.
- 8) Emil Fischer postulate _____ model.
- 9) Griseofulvin, is produced as _____ Metabolite.
- 10) Mention the year in which Wang and Hesseltine accidentally find the Fermentation process?
- 11) In which year was Induced-fit model proposed?
- 12) What is reverse osmosis?
- 13) What is collision theory?
- 14) In Continuous fermentation, there is exponential growth phase is observed. State if the above mentioned statement is true or false?
- 15) What is sigmoidal curve? Name the phases of the sigmoidal curve in microbial growth.

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- 16) Increasing the substrate concentration in an enzymatic reaction could overcome which of the following?
- A) Denaturization of the enzyme
 - B) Allosteric inhibition
 - C) Competitive inhibition
 - D) Noncompetitive inhibition
- 17) _____ is used to grow bacterial cultures continuously.
- 18) Starvation proteins are produced by a culture during which parts of the growth curve?
- 19) What is Ion-exchange chromatography?
- 20) As the concentration of the enzyme is increased, the velocity of the reaction proportionately_____.

SECTION – B

ANSWER ANY FOUR QUESTIONS:

(4 x 10 = 40)

- 21) What is Michaelis–Menten Constant? Explain and derive the equation.
- 22) Classify the Enzymes based on nomenclature.
- 23) Explain the different separation techniques used in Bioprocess technology.
- 24) Explain the kinetics of multiple substrate enzyme catalyzed reaction.
- 25) Explain packed bed bioreactor with suitable diagram.
- 26) Discuss various drying methods of bioproducts.
- 27) Describe the different types of mass transfer.

SECTION – C

ANSWER ANY TWO QUESTIONS:

(2 x 20 = 40)

- 28) Explain the various methods of enzyme immobilization with a note on its advantages and Disadvantages. Comment on the applications of this technique.
- 29) Explain the various cell disruption methods used in lab scale and industrial scale fermentation process.
- 30) Discuss in detail the different modes of operation of fermentation process.
- 31) Comment on the different sterilization methods and mention at least one circumstance of the use of each method.
