

B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

BIO TECHNOLOGY

BTY103: Basic Industrial Biotechnology

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Which one of the following is used to measure air flow rate in fermenters?
a) Gauge b) Impeller c) Rotameter d) Thermocouple
2. Foam formation in fermenters is due to the denaturation and deposition of the following on to the air bubbles
a) Lipids b) Proteins c) Carbohydrates d) Sphingolipids
3. During which phase of microbial growth the primary metabolites are released?
a) Lag b) Log c) Stationary d) Death
4. Which of the following is an example of primary metabolite?
a) Gibberellic acid b) Streptomycin c) Butanol d) Penicillin
5. Secondary metabolites are associated products of
a) Growth b) Non-growth c) Both growth & non-growth d) Recombinant
6. Biotransformation is mainly carried out to produce
a) Vitamins b) Citric acid c) Steroids d) Fatty acids
7. Which of the following proteases are more suitable for detergent applications?
a) Acidic b) Neutral c) Alkaline d) Both acidic & neutral
8. The main purpose of the baffles in fermenters is to avoid
a) Foam formation b) An increase in viscosity
c) Vortex formation d) Heat accumulation
9. The mass of plant cells called Callus is
a) Organized b) Differentiated
c) Both organized and differentiated d) Unorganized & undifferentiated
10. Monoclonal antibodies are produced using
a) B-cells b) T-cells c) RBC d) Both T-cells & RBC

PART B (10 x 2 = 20 Marks)

11. Define solid state fermentation.
12. Classify the microbes based on temperature requirements
13. Write the structure of tryptophan and butanol
14. List out the microbes widely being used for the production of acetic acid

15. Name the precursors used in the production of penicillin G and V
16. Highlight the characteristics of macrolide antibiotics
17. Nisin preferred to synthetic antibiotics as preservative in food applications- validate the statement.
18. What are the applications of xanthan gum?
19. What are recombinant proteins?
20. Differentiate “callus cultures” from “suspension cultures”

PART C (5 X 14 = 70 Marks)

21. a) Explain the mutant selection and recombinant DNA methods for overproduction of metabolites **(OR)**
 - b) (i) What are the advantages and disadvantages of immobilized enzymes (6)
 - (ii) Draw a neat labeled diagram of a fermenter and mention the functions of accessories (8)
22. a) Write in detail the method of commercial production of
 - (i) citric acid and
 - (ii) glutamic acid **(OR)**
 - b) (i) Give the flow chart for ethanol production. (10)
 - (ii) Write short notes on biosafety in fermentation industry (4)
23. a) Explain the steps involved in the production of penicillin with a neat flow chart **(OR)**
 - b) (i) With suitable examples illustrate the commercial production of steroids. (12)
 - (ii) Write the importance of bioethics in biotechnology. (2)
24. a) What are different types of cheese? Explain the steps involved in the production of cheddar cheese. **(OR)**
 - b) Write short notes on
 - (i) Single cell protein (4)
 - (ii) Enzymes used in detergents and food industries (10)
25. a) i) Describe the methods for the production of vaccines. (14)
 ii) Name any four commercially available products through animal cell culture. (2)
(OR)
 - b) (i) Discuss in detail the production and various applications of monoclonal antibodies.
