Register Number: ……..

B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2012

Third Semester

BIOTECHNOLOGY

BTY103: Basic Industrial Biotechnology

Time: Three hours **Maximum Marks: 100**

Answer ALL the Questions

PART A (10 x 1 = 10 Marks)

1. Which of the following fermentation is carried out in the absence of free flow of water?
   a) Solid state fermentation b) Submerged fermentation
   c) Both (a) and (b) d) None
2. Doubling of microbial cells is observed during ……. phase
   a) Lag b) Log c) Stationary d) Death
3. Primary metabolites are …….of microbes
   a) Required for growth b) Not required for growth
   c) Sometimes required for growth d) None
4. Activated carbon is used to remove ……. during purification of organic acids
   a) Carbohydrates b) Proteins c) Lipids d) Colored impurities
5. Secondary metabolites are released during …….. phase of microbial growth
   a) Lag b) Log c) Stationary d) Death
6. Penicillin inhibits the growth of …….
   a) Yeast b) Fungi c) Both yeast & fungi d) Bacteria
7. Baffle is used to prevent …….. formation in bioreactors
   a) Vortex b) Scale c) Product d) Foam
8. Which one of the following is used as thickening agent in food industries?
   a) Single cell protein b) Nisin c) Xanthan gum d) PHA
9. ……is used for diagnostic applications
   a) Monoclonal antibodies b) Amylase c) Capsaicin d) Insulin
10. Pore of HEPA filter used in laminar air-flow hood and fermenters is ….. µm
    a) 1 b) 2 c) 0.2 d) 0.5

PART B (10 x 2 = 20 Marks)

11. Classify the microbes based on their temperature requirement for growth
12. List out the advantages of immobilizing enzymes
13. What do you meant by azeotropic mixture?
14. Name the industrial applications of butanol
15. Write the structure of penicillin
16. What are the benefits of secreting secondary metabolites (for example penicillin) to Penicillium chrysogenum?
17. List out the enzymes used in pharmaceutical industries
18. Draw the structure of stirred tank reactor and label the ancillaries
19. What are the advantages of biopreservatives over chemical preservatives?
20. Differentiate between callus and suspension culture in plant cell culture

PART C (5 x 14 = 70 Marks)

21. a) Describe mutantion and recombinant DNA methods used for strain improvement

(OR)

b) (i) What are the advantages and disadvantages of natural and synthetic media? (7)

(ii) Write short notes on different agitators used in fermenters (7)

22. a) Explain the industrial production and purification of lactic acid with flow chart

(OR)

b) (i) Write the flow chart for the production of phenylalanine (7)

(ii) Write short notes on biosafety in biotechnology (7)

23. a) Discuss in detail on the production of penicillin with flow chart

(OR)

b) Write short notes on the production of erythromycin and vitamin B_{12} (7)

24. a) (i) List out the enzymes used for beverage applications (7)

(ii) Write short notes on the production of cheese (7)

(OR)

b) How is xanthan gum produced industrially?

25. a) Describe the production of therapeutic proteins (insulin) along with flow chart

(OR)

b) Write in detail on medium requirements and production of products through animal cell culture

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