

B.TECH. DEGREE EXAMINATIONS: APRIL/MAY 2009

Fourth Semester

BIOTECHNOLOGY**U07BT301 Basic Industrial Biotechnology****Time: Three Hours****Maximum Marks: 100****Answer ALL the Questions:-****PART A (20 x 1 = 20 Marks)**

1. Development of Acetone- Butanol fermentation during First world war was pioneered by
 - a) Edward Jenner
 - b) Chaim Weizmann
 - c) Alexander Flemming
 - d) Louis pastuer
2. Who pioneered the method of isolating the pure culture and propagating single yeast cells to produce pure cultures and established the sophisticated the technique for production of starter cultures
 - a) Hansen
 - b) Cagniard_Latour
 - c) Schwann
 - d) Kutzing
3. _____ was the first brewed product by the ancient Egyptians
 - a) Wine
 - b) Vinegar
 - c) Beer
 - d) Ethanol
4. Lovastatin a drug used for reducing _____ levels in the serum
 - a) Cholesterol
 - b) Urea
 - c) Glucose
 - d) Creatinine
5. Citric acid is largely produced by solid state fermentation using
 - a) Saccharomyces Cerevisiae
 - b) Zymomonas mobilis
 - c) E.Coli
 - d) Aspergillus niger
6. Carl Lucas Alsberg described the production of Gluconic acid using _____ bacterium
 - a) Pseudomonas sp
 - b) E.Coli
 - c) Bacillus subtilis
 - d) Zymonas mobilis
7. Match the functions of the following amino acids

A. D, L Alanine	1. Ulcer Therapy
B. Histidine	2. Flavour enhancer
C. L_Serine	3. Antioxidant, Bronchitis Therapy
D. L-Cysteine	4. Cometics

 - a) A-2, B-1, C- 4, D- 3
 - b) A-1, B-3, C- 4, D- 2
 - c) A-4, B-2, C- 1, D- 3
 - d) A-3, B-4, C- 1, D- 2

8. L-Glutamic acid is produced by the
- Corynebacterium sp
 - Pseudomonas sp
 - Bacillus sp
 - Shigella sp
9. 1,4- α -glucan-glucanohydrolases is enzyme involved in the hydrolysis of the
- Lipids
 - Amino acids
 - Starch
 - Proteins
10. _____ is a Milk-coagulating enzyme obtained from the stomach of young calves.
- Protease
 - Amylase
 - Lipase
 - Rennet
11. Corrin is the basic structure in the production
- Vitamin A
 - Vitamin D
 - Vitamin B₁₂
 - Vitamin E
12. Immobilization of enzymes is done
- To enhance activity.
 - To stabilize the enzyme.
 - To inhibit enzyme activity.
 - To avoid binding to substrate.
13. Match the following organism relevant to their antibiotics production
- | | |
|---------------|--|
| A. Cobalamine | 1) <i>Flavobacterium sp</i> |
| B. Riboflavin | 2) <i>Blakeslea trispora</i> |
| C. B-Carotene | 3) <i>Ashbya gossypii</i> |
| D. Zeaxanthin | 4) <i>Propionibacterium freudenreichii</i> |
- A-3, B-4, C-2, D- 1
 - A-3, B-1, C-4, D- 2
 - A-4, B-2, C-3, D- 1
 - A-4, B-3, C-2, D- 1
14. Match the antibiotics based on their chemical structure
- | | |
|--------------------|-----------------|
| A. Aminoglycosides | 1) Erythromycin |
| B. Macrolide | 2) Streptomycin |
| C. Quinones | 3) Cycloserine |
| D. Aminoacid | 4) Tetracycline |
- A-3, B-4, C-2, D- 1
 - A-2, B-1, C-4, D- 3
 - A-2, B-3, C-4, D- 1
 - A-3, B-2, C-1, D- 4
15. Cephalosporins are
- Betalactam antibiotics
 - Aminoacid and peptide antibiotics
 - Protein synthesis inhibiting antibiotics
 - Chromopetide antibiotics

16. Hybridoma technology is used to produce
- Nisin
 - Monoclonal antibodies
 - Cell lines
 - Single cell proteins
17. The term single cell protein was coined the
- Indian Institute of Science (IIT)
 - Massachusetts Institute of Technology (MIT)
 - National Institute of Health (NIH)
 - Fredrick Institute of Technology (FIT)
18. The Hybridoma cells is fusion of myeloma cells with _____
- T cells
 - antigens
 - Lymphocytes
 - Macrophages
19. Among the following which is not a biological pesticide.
- Steinernema feltiae
 - Bacillus thuringiensis
 - Trichoderma
 - Escheria coli
20. The first microbial produced organic acid was
- Itaconic acid
 - Kojic acid
 - Lactic acid
 - Succinic acid

PART B (5 x 16 = 80 Marks)

21(a). Explain with neat labeled illustration the Schematic representation of a typical fermentation process.

(OR)

21(b). Explain briefly the different methods involved in the strain development for an economical industrial fermentation process.

22(a) Elaborately write with a neat flowchart the different steps involved in the biosynthesis of ethanol from carbohydrate source by batch fermentation process.

(OR)

22(b) Explain in detail the surface processes/solid state fermentation of wheat bran by *A.niger* for citric acid production.

23(a) Explain the types of amylases and add note on their significance in the industrial applications.

(OR)

23(b) Explain the different steps involved in the biosynthesis of the economic important vitamin B₁₂ (Cobalamines) by industrial production.

24(a) What are single cell proteins (SCP), explain their production process from different substrates.

(OR)

24(b) Narrate the applications of Nisin, explain the production of nisin from the dairy industry waste.

25(a) Explain with necessary illustrations the synthesis of monoclonal antibodies by hybridoma technology.

(OR)

25(b) Mention the steps involved in the animal cell culture and a note on its applications.
