

**B.Sc. MICROBIOLOGY  
SIXTH SEMESTER  
INDUSTRIAL MICROBIOLOGY  
BMB – 601**

( Use Separate Answer Scripts for Objective & Descriptive )

Duration : 3 hrs.

Full Marks : 70

[ PART-A: Objective ]

Time : 20 min.

Marks : 20

**Choose the correct answer from the following:**

**1 × 20 = 20**

1. Bacteria secrete or produce secondary metabolites in \_\_\_\_\_ of growth curve
  - a. Lag phase
  - b. Log phase
  - c. Stationary phase
  - d. Death Phase
2. Hydroxylation reaction involved
  - a. Removal of Hydrogen from the substrate
  - b. Removal of Hydroxyl group (OH) from the substrate
  - c. Addition of Hydrogen(H) to the substrate
  - d. Addition of Hydroxyl group (OH) from the substrate
3. Which of the following is a B-Lactam antibiotics
  - a. Sulphanillamide
  - b. Penicillin
  - c. Tetracycline
  - d. Chloramphenicol
4. Find out the therapeutic index of an antibiotic where the therapeutic dose is ED10 and toxic LD20
  - a. 0.5
  - b. 1.0
  - c. 2.0
  - d. 1.5
5. The organism involved in acetous fermentation is
  - a. Gluconobacter
  - b. Acetobacter
  - c. Azotobacter
  - d. Enterobacter
6. Cider vinegar is produced from fermenter
  - a. Rice
  - b. Apple
  - c. Malt
  - d. Molasses
7. The organism involved in Lactic fermentation is
  - a. Acetobacter
  - b. Lactobacillus
  - c. Leuconostoc
  - d. None
8. The precursor of glutamic acid synthesis is
  - a. Lysine
  - b. Acetyl CoA
  - c. A Ketoglutarate
  - d. Succinate

9. The calcium carbonate added in the medium during fermentation of Lactic acid acts as
- Salt
  - Buffer
  - Neutral solution
  - All
10. Auxotrophy means
- Ability of an organism to synthesize particular organic compounds required for its growth
  - Inability of an organism to synthesize particular organic compound required for its growth
  - Ability to do photosynthesis
  - The one who produce auxin hormone
11. Citric acid found in citrus fruit is
- Inorganic acid
  - Organic acid
  - Both a&b
  - Very strong acid
12. Tetracycline are a group of which antibiotics
- Sulpha drugs
  - Quinones
  - B Lactam
  - Aromatic
13. Which of the following Blactam antibiotics are B lactamase sensitive,broad spectrum and heat stable
- Benzyll Penicillin
  - Oxacillin
  - Ampicillin
  - Propicillin
14. Corynebacterium glutamicum produces \_\_\_\_\_high biotin content
- Cystein
  - Valine
  - Lysine
  - Tryptophan
15. Four phase bacterial curve is applicable only for
- Batch culture
  - Continuous culture
  - Fed batch culture
  - All of these
16. Aminoacid are metabolites of pharmacological interest and it is produced industrially from microbes .It is the product of \_\_\_\_\_
- Primary metabolism
  - Secondary metabolism
  - Both a&b
  - None
17. Secondary metabolite is produced in
- Trophophase
  - Both
  - Idiophase
  - None
18. Purification of penicillin is done by
- Liquid liquid separation
  - Ion exchange chromatography
  - Adsorption chromatography
  - Solid liquid separation

19. Streptomycin is purified by
- a. Anion exchange chromatography
  - b. Cation exchange chromatography
  - c. Adsorption chromatography
  - d. Gel permeation chromatography
20. Surface active agents are added to separate solid by which method
- a. Filtration
  - b. Precipitation
  - c. Foam separation
  - d. All

= = \*\*\* = =

**( PART-B : Descriptive )**

Time : 2 hrs. 40 min.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

1. Explain the biosynthesis pathway and production of citric acid with a neat diagram? 10
2. Describe the process of selection, improvement and maintenance of Industrial important strain 10
3. a. Define fermentation? Explain batch and continuous fermentation with a neat diagram. 5+5=10  
b. Explain the mechanism of growth kinetics of continuous fermentation
4. Explain the biosynthesis and production of Ethanol 10
5. a. Explain downstream processing with a flow chart diagram. 5+5=10  
b. Describe the method of Adsorption and Affinity chromatography
6. a. Define primary and secondary metabolites? 5+5=10  
b. Describe the biosynthetic pathway and production process of penicillin with a neat diagram
7. Explain the production of beer with flowchart diagram 10
8. a. Explain the various parts of a fermenter with a neat diagram. 5+5=10  
b. Describe the biosynthetic pathway and production process of Lactic acid

= = \*\*\* = =