

REV-01
BBT/02/07

2025/05

**B.Sc. BIOTECHNOLOGY
FOURTH SEMESTER (REPEAT)
GENERAL MICROBIOLOGY
BBT-401**

**SET
A**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

(Objective)

Marks: 20

1X20=20

Choose the correct answer from the following:

1. Name the scientist who proposed the phylogenetic tree for living things
 - a. Carlo Urbani
 - b. Louis Pasteur
 - c. Robert Koch
 - d. Carl Woese
2. Which of the following are found in extreme saline conditions
 - a. Archaeobacteria
 - b. Eubacteria
 - c. Cyanobacteria
 - d. Mycobacteria
3. Suppose a bacterial population increases from 10^3 cells to 10^9 cells in 10 hrs, find the growth of the bacteria
 - a. 5.0 gen/h
 - b. 2.0 gen/h
 - c. 1.0 gen/h
 - d. 3.0 gen/h
4. When a organism is dependent on other organism for nutrients is known as
 - a. Mutualism
 - b. Commensalism
 - c. Ammensalism
 - d. Parasitism
5. Nodule formation in plant is done by which gene
 - a. Nif
 - b. Rhicadhesin
 - c. Flavanoids
 - d. Nod
6. Who discovered the concept of pure culture
 - a. Louis Pasteur
 - b. Robert Koch
 - c. Anton Von Leewenhoek
 - d. Joseph Lister
7. Who is known as Father of modern Microbiology
 - a. Louis Pasteur
 - b. Robert Koch
 - c. Anton Von Leewenhoek
 - d. Joseph Lister
8. Quinolone is a drug which act on the bacteria by
 - a. Inhibiting the Protein synthesis
 - b. Inhibition of the Cell wall
 - c. Stops replication
 - d. Inhibit the production of folic acid

9. When two types of C sources are given in a culture media then its known as
 - a. Fed Batch culture
 - b. Minimal media
 - c. Diauxic growth
 - d. Batch culture
10. Sulphanillamide is a type of which drug
 - a. Inhibit cell wall synthesis
 - b. Base analoge
 - c. Inhibit Protein synthesis
 - d. None
11. Hopanoids is present in which part of bacterial cell
 - a. Cell wall
 - b. Capsule
 - c. Plasma Membrane
 - d. Pili
12. Each of the following statements concerning the Gram stain's is correct except
 - a. E.coli stains pink because it has a thin peptidoglycan layer
 - b. Streptococcus pyogens stains blue because it has a thick peptidoglycan layer
 - c. Mycoplasma pneumoniae is not visible in the Gram's stain because it does not have a cell wall
 - d. Mycobacterium tuberculosis stains blue because it has a thick lipid layer
13. Flavanoids is a
 - a. Primary metabolites secreted from plant
 - b. Primary metabolites secreted from microorganism
 - c. secondary metabolites secreted from plant
 - d. secondary metabolites secreted from microorganism
14. Indian ink or Nigrosin dye is used to stain the bacterial
 - a. Cell wall
 - b. Endospore
 - c. Capsule
 - d. Flagella
15. Which one of the following is true
 - a. Agar has nutrient properties
 - b. Chocolate medium is selective medium
 - c. Addition of selective substances in a solid medium is called enrichment media
 - d. Nutrient broth is basal medium
16. Secondary metabolites is produced in which phase
 - a. Early log Phase
 - b. Late Lag phase
 - c. Late lag phase
 - d. Late Log Phase
17. What is the relationship with generation time and growth in bacteria
 - a. $K \propto 1/g$
 - b. $K=g$
 - c. $K \propto g$
 - d. None
18. Which of the following bacteria is pleomorphic?
 - a. Mycobacteria
 - b. Streptococcus
 - c. Pseudomonas
 - d. Corynebacterium

19. Rhodamine is a dye used in which type of microscope
- | | |
|---------------------------|---------------------------|
| a. Brightfield microscope | b. Fluorescent microscope |
| c. Phase Contrast | d. Electron |
20. Conventional method of bacterial identification is done by
- | | |
|---|-------------|
| a. 16-S rRNA | b. 18-SrRNA |
| c. Bergeys Manual of Determinative Bacteriology | d. 23-srRNA |

(Descriptive)

Time : 2 hrs. 30 min.

Marks : 50

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

1. Describe the bacterial cell wall with a neat diagram? Explain the principle of Gram staining 8+2=10
2. Explain continuous fermentation? Describe the contribution of microorganisms in the field of Industry with reference to the product and biosynthetic pathway of Alcohol? Why *Zymomonas mobilis* is considered best as compared to *Saccharomyces cerevisiae* 10
3. Explain diauxic growth curve? Define bacterial growth curve with a neat diagram Describe the kinetics of batch culture? 2+2+6=10
4. What is Rhicadhesin? Explain symbiotic relationship of Rhizobium and leguminous plants with a neat diagram? How Rhizobium serve as a helper bacteria during miccorhizal interaction 10
5. Explain the principle of fluorescent microscope? Describe the process of staining technique of fluorescent microscope? 5+5=10
6. Explain the production of Insulin with a neat diagram? How commercial available insulin is different from naturally produced Insulin 5+5=10
7. Explain the principle and staining procedure of shadowing in TEM 5+5=10
8. Explain the mode of action of 5+5=10
a) sulpha drug
b) Quinolone

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