

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

**SET
B**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Name the scientist who proposed the phylogenetic tree for living things.
 - Carlo Urbani
 - Louis Pasteur
 - Robert Koch
 - Carl Woese
- Which of the following are found in extreme saline conditions?
 - Archaeobacteria
 - Eubacteria
 - Cyanobacteria
 - Mycobacteria
- Suppose a bacterial population increases from 10^3 cells to 10^9 cells in 10 hrs, find the growth of the bacteria.
 - 5.0 gen/h
 - 2.0 gen/h
 - 1.0 gen/h
 - 3.0 gen/h
- When an organism is dependent on another organism for nutrients is known as:
 - Mutualism
 - Commensalism
 - Amensalism
 - Parasitism
- Nodule formation in plant is done by which gene?
 - Nif
 - Rhoadhesin
 - Flavanoids
 - Nod
- Who discovered the concept of pure culture?
 - Louis Pasteur
 - Robert Koch
 - Anton Von Leewenhoek
 - Joseph Lister
- Who is known as Father of modern Microbiology?
 - Louis Pasteur
 - Robert Koch
 - Anton Von Leewenhoek
 - Joseph Lister
- Quinolone is a drug which act on the bacteria by:
 - Inhibiting the protein synthesis
 - Inhibition of the cell wall
 - Stops replication
 - Inhibit the production of folic acid
- When two types of C sources are given in a culture media then its known as:
 - Fed Batch culture
 - Minimal media
 - Diauxic growth
 - Batch culture
- Sulphanillamide is a type of which drug?
 - Inhibit cell wall synthesis
 - Base analogue
 - Inhibit Protein synthesis
 - None

11. Hopanoids is present in which part of bacterial cell?
- Cell wall
 - Capsule
 - Plasma Membrane
 - Pili
12. Each of the following statements concerning the Gram stain's is correct except:
- E.coli stains pink because it has a thin peptidoglycan layer
 - Streptococcus pyogenes stains blue because it has a thick peptidoglycan layer
 - Mycoplasma pneumoniae is not visible in the Gram's stain because it does not have a cell wall
 - Mycobacterium tuberculosis stains blue because it has a thick lipid layer
13. Flavanoids is a:
- Primary metabolites secreted from plant
 - Primary metabolites secreted from microorganism
 - Secondary metabolites secreted from plant
 - Secondary metabolites secreted from microorganism
14. Indian ink or Nigrosin dye is used to stain the bacterial:
- Cell wall
 - Endospore
 - Capsule
 - Flagella
15. Which one of the following is true?
- Agar has nutrient properties
 - Chocolate medium is selective medium
 - Addition of selective substances in a solid medium is called enrichment media
 - Nutrient broth is basal medium
16. Secondary metabolite is produced in which phase?
- Early Log Phase
 - Late Lag Phase
 - Late Log Phase
 - Late Lag Phase
17. What is the relationship with generation time and growth in bacteria?
- $K \propto 1/g$
 - $K = g$
 - $K \propto g$
 - None
18. Which of the following bacteria is pleomorphic?
- Mycobacteria
 - Streptococcus
 - Pseudomonas
 - Corynebacterium
19. Rhodamine is a dye used in which type of microscope?
- Brightfield microscope
 - Fluorescent microscope
 - Phase Contrast
 - Electron
20. Conventional method of bacterial identification is done by:
- 16-S rRNA
 - 18-SrRNA
 - Bergeys Manual of Determinative Bacteriology
 - 23-srRNA

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

1. Explain diauxic growth curve. Define bacterial growth curve with a neat diagram. Describe the kinetics of batch culture. 2+2+6=10
2. Explain the principle and staining procedure of shadowing in TEM. 5+5=10
3. Describe the bacterial cell wall with a neat diagram. Explain the principle of Gram staining. 8+2=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 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
8. Explain the mode of action of: 5+5=10
 - a) Sulpha drug
 - b) Quinolone

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