REV-01
MMB/04/10

2025/06

SET A

M.Sc. MICROBIOLOGY
SECOND SEMESTER
MICROBIAL GENETICS
MMB-205

[USE OMR FOR OBJECTIVE PART]

Duration: 1.30 hrs. **Full Marks: 35**

Objective

Time: 15 min. **Marks: 10**

Choose the correct answer from the following: *1X10=10*

1. When viral genome can become integrated into the bacterial genome they are known as
   a. Temperate phage
   b. Bacteriophage
   c. Virus
   d. Prophage

2. The ability of bacteria to uptake the host DNA from the environment is known as
   a. Competent cell
   b. Plasmid
   c. Transformed cell
   d. None

3. The transfer of naked DNA from one cell to another is referred to as .....
   a. Transduction
   b. Lysogeny
   c. Transformation
   d. Conjugation

4. Ames Test determines the mutation
   a. Spontaneous mutation
   b. Induced mutation
   c. Reversion mutation
   d. Missence mutation

5. Mutation caused in the presence of external agents
   a. Spontaneous
   b. Missence mutation
   c. Induced mutation
   d. Reversion mutation

6. What is the primary function of F plasmid?
   a. To produce colicins
   b. To enable bacterial conjugation
   c. To confer antibiotic resistance
   d. To degrade environmental toxins

7. What is the primary role of origin of replication (ori) in plasmid?
   a. To initiate plasmid replication
   b. To encode antibiotic resistance genes
   c. To produce colicins
   d. To facilitate plasmid curing

8. What is plasmid partitioning?

a. The process of eliminating plasmids from a bacterial cell

b. The process of ensuring plasmids are evenly distributed daughter cells during cell division

c. The replication of plasmids within a bacterial cell

d. The transfer of plasmids between bacteria cells

9. What is plasmid curing?

a. The process of eliminating plasmids from a bacterial cell

b. The replication of plasmids within a bacterial cell

c. The transfer of plasmids between bacterial cells

d. The production of colicins by plasmids

10. Which of the following statement is **TRUE** regarding high copy number plasmid?

a. They replicate only once per bacterial cycle

b. They maintain a low concentration at host cell.

c. They often lack stringent replication control mechanisms

d. They ate always larger in size

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Descriptive

Time : 1 hrs. 15 min. Marks : 25

[Answer question no.1 & any two (2) from the rest]

1. Explain the mechanism of specialized transduction. Describe the HFT and LFT with a neat diagram? 5

2. Define tautomerism? Explain spontaneous mutation with a neat diagram? Explain Ames test with a neat diagram 2+5+3=10

3. Explain HFR conjugation with a neat diagram? Plot a graph time vs frequency graph of 10
Lactose: 10min freq: 80
Tryptophan: 20 min freq: 70
Galactose: 30 min Freq: 50

4. Explain the mechanism of plasmid replication and partitioning in prokaryotes. Discuss the difference between high copy number and low copy number plasmid. 10

5. Describe the structure, function and significance of Ti and linear plasmid 10

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