REV-01
BMB/16/21

2024/05

SET A

B.Sc. MICROBIOLOGY
FOURTH SEMESTER
MICROBIAL GENETICS
BMB-402

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

(Objective)

Time: 15 mins. **Marks: 10**

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

1. Mutations can be:
   a. Dominant
   b. Recessive
   c. Both a and b
   d. Neither a nor b

2. Following is a deaminating agent:
   a. 5-bromouracil
   b. Nitrous acid
   c. Ethyl Methane Sulfonate
   d. None of the above

3. Mutagenic potential of a chemical can be determined using:
   a. Ames test
   b. Replica plating technique
   c. Mutation test
   d. All of the above

4. Examples of mutator genes:
   a. hMSH2
   b. hMSH6
   c. hMLH
   d. All of the above

5. Which one is not true about plasmid?
   a. Extrachromosomal genetic material
   b. dsDNA
   c. Replication depends on host
   d. All are true

6. The number of molecules of an individual plasmid that are normally found in a single bacterial cell is known as?
   a. Conjugative ability
   b. Replicative ability
   c. Copy number
   d. All of the above

7. Where is Ter site located and what is the importance?
   a. Next to Ori and initiates replication
   b. Opposite to Ori and initiates replication
   c. Opposite to Ori and terminates replication
   d. Both a and b

8. Which of the following is true for a cross between Hfr and F−?
   a. Frequency of recombination is high, transfer of F factor is low
   b. Frequency of recombination is high, transfer of F factor is high
   c. Frequency of recombination is low, transfer of F factor is low
   d. Frequency of recombination is low, transfer of F factor is high

9. Which of the following things was identified as the transforming principle?
   a. RNA
   b. DNA
   c. Proteins
   d. All of the above

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

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Descriptive

Time : 1 hr. 15 mins. **Marks : 25**

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

1. What is mutation? Explain the types with proper diagram. 5
2. Explain in detail "the uses of mutation". 10
3. Define plasmids. What is the importance of large size plasmids in the field of genetic engineering? Explain the structure and features of Ti plasmids with a suitable diagram. Explain the replication process that helps in the movement of DNA from F+ to F-. Draw a suitable diagram. 1+2+4+3=10
4. What is the difference between F+ plasmid and hfr? Explain the method of transfer of F plasmid to a recipient bacterium. Draw a suitable diagram. What do you mean by a competent cell? What is the importance of such cell in rDNA technology? Justify your answer. Explain partitioning and its importance. 2+4+1+3=10
5. What is the difference between transformation and transduction? What is the important feature for a stable transformation to take place? Justify your answer. What was Griffith working on? Explain his work in context to transformation. Write in brief about transduction. 1+2+4+3=10

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