

**M.Sc. MICROBIOLOGY  
SECOND SEMESTER  
MICROBIAL GENOMICS  
MMB-203**

**SET  
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

Time: 15 mins.

Marks: 10

**(Objective)**

*Choose the correct answer from the following:*

*1 × 10 = 10*

- Which of the following is correct for vectors?
  - Are DNA molecules
  - Carry foreign DNA fragment
  - Self-replicating
  - All of the above
- Examples of common vectors are:
  - Plasmids
  - Phasmids
  - Both a and b
  - Only a
- Denaturing agent used in DGGE technique is:
  - Urea
  - Formamide
  - Both a and b
  - Neither a nor b
- FISH is not used for:
  - Karyotyping
  - DNA sequencing
  - Disease identification
  - Both a and c
- The idea behind shotgun sequencing includes:
  - Breaking down the genome into smaller fragments
  - Assembling the sequences after sequencing
  - Both a and b
  - Only a
- In PFGE DNA can be separated by:
  - Altering the direction of DNA migration
  - By altering the electric field
  - Neither a nor b
  - Both a and b
- RAPD is a:
  - Dominant marker
  - Codominant marker
  - Heterozygous marker
  - Homozygous marker
- Identify the correct one for RFLP.
  - PCR is not involved
  - Co-dominant marker
  - Both a and b
  - Neither a nor b
- A concatemer is a:
  - Long continuous DNA molecule
  - Contain multiple copies of same DNA
  - Linked chain
  - All of the above

10. Functional genomics includes:

- a. Gene expression
- c. Reverse genetics

- b. Forward genetics
- d. All of the above

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**(Descriptive)**

Time : 1 hr. 15 mins.

Marks : 25

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

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|--|--------|
| 1. What is whole genome shotgun sequencing? Explain.   | 5      |
| 2. What is SAGE? Explain in detail with proper diagram of each step.   | 10     |
| 3. Write short notes on:   | 5×2=10 |
| a) FISH  |        |
| b) DGGE  |        |
| 4. Write brief note on the following:  | 5×2=10 |
| a) PFGE method   |        |
| b) Physical mapping by DNA hybridization   |        |
| 5. Write down the differences between RFLP and RAPD. What is simple sequence length polymorphism? Explain in detail. | 5+5=10 |

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