REV-01
MMB/01/06

2025/12

SET A

M.Sc. MICROBIOLOGY
FIRST SEMESTER (REPEAT)
GENETICS
MMB-105

[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. The double helical model of DNA was proposed by
   a. James Watson and Francis Crick
   b. Ernst Haeckel
   c. Kary Mullis
   d. Oswald Avery

2. The Human Genome Project was started in the year
   a. 2003
   b. 1990
   c. 1976
   d. 2001

3. Hungtington's disease is an example of
   a. Autosomal recessive inheritance
   b. X-linked recessive inheritance
   c. Autosomal dominant inheritance
   d. X-linked dominant inheritance

4. A condition of an extra copy of a chromosome 21 is
   a. Turner syndrome
   b. Klinefelter syndrome
   c. Down's syndrome
   d. None of the above

5. The OMIM database is a searchable catalog of
   a. Human genes
   b. Genetics disorders
   c. Mutation
   d. All of the above

6. Which of the following regarding the Ames test is true?
   a. It is used to identify newly formed auxotrophic mutants.
   b. It is used to identify mutants with restored biosynthetic activity.
   c. It is used to identify spontaneous mutants.
   d. It is used to identify mutants lacking photoreactivation activity.

7. Alleles are
   a. Alternate forms of genes
   b. Linked genes
   c. Chromosomes that have crossed over
   d. Homologous chromosomes

8. This statement is true about Thalassemia
   a. There is a type of thalassemia depending on the number of mutations in genes
   b. It is caused by mutations in the DNA of cells which make up the haemoglobin
   c. Mild thalassemia may not need treatment
   d. All of these

9. This type of thalassemia disease is Cooley anaemia
   a. Alloimmunization
   b. Beta-thalassemia
   c. Alpha-thalassemia
   d. None of these

10. Which of the following is a trait of X-linked recessive?
   a. Albinism
   b. Haemophilia
   c. Huntington's disease
   d. Rett syndrome

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Descriptive

Time : 1 hrs. 15 min. Marks : 25

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

1. Explain Ames Test. 5

2. What is autosomal recessive inheritance? Explain with an example and draw the pedigree chart. 10

3. Explain different types of gene mutation with diagrams. 10

4. Differentiate between reversion and suppression. Explain auxotrophic, conditional, and lethal phenotypes. 5 + 5 = 10

5. Write short notes on: 5 + 5 = 10
   (i) Hemoglobinopathies
   (ii) Branches of genetics

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