

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022  
(Second Semester)

Branch – MICROBIOLOGY

MICROBIAL GENETICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. Choose the F<sub>1</sub> Progeny exhibit characteristics of both the parents.  
a. Complete dominance                      b. Incomplete dominance  
c. Co-eominance                              d. Multiple allelism
2. When a piece of one chromosome breaks off and attaches to another chromosome is called as  
a. Duplication                                b. Translocation  
c. Inversion                                    d. Transversion
3. Who first demonstrated genetic recombination between bacterial cells?  
a. Ochoa and Kornberg                      b. Har Gobind Khorana  
c. H.J. Muller                                    d. Lederberg and Tatum
4. Which of the following functions is not performed by Transposase?  
a. Restriction of the IS element            b. Integration of the transposon  
c. Formation of the RNA intermediate    d. Restriction of the host genome
5. Identify the variation in the restriction DNA fragment lengths between individuals of a species.  
a. RFLP    b. RAPD  
c. AFLP    d. SSR

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

6. a. Explain the concept of gene  
(or)  
b. State about linkage and crossing over.
7. a. Discuss biochemical mutation.  
(or)  
b. Illustrate mismatch repair mechanism.
8. a. Explain self-transmissible and mobilizable plasmid.  
(or)  
b. Artificial induced competence - Justify.
9. a. Elucidate different types of Transposons.  
(or)  
b. State about yeast Ty-1 transposon.
10. a. Prepare a note on petite mutants.  
(or)  
b. Explain the life cycle of M13.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Describe the extensions of Mendelian genetics.  
(or)  
b. Differentiate sex limited and sex influenced characters.
12. a. Classify various types of mutations.  
(or)  
b. Interpret complementation test.
13. a. Elucidate the molecular mechanism of gene transfer by conjugation.  
(or)  
b. Compare generalized from specialized transduction.
14. a. Explain the regulation of Transposition activity  
(or)  
b. Describe molecular mechanism of transposition.
15. a. Construct genetic mapping by somatic cell hybrid.  
(or)  
b. Elaborate phage genetics.

Z-Z-Z

END