

QP Code: P25B006

Reg. No : .....

Name : .....

**ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20**

**II SEMESTER (CBCSS-PG) DEGREE EXAMINATION, MARCH 2025**

**M Sc Microbiology**

**MBG2C05 : PRINCIPLES OF GENETICS**

**2024 Admission Onwards**

**Time:3 Hours**

**Maximum Weightage:30**

**Part A**

*Short answer type questions: Answer **any four** questions. Weightage 2 for each question.  
(4x2 = 8 Weightage)*

1. Explain mutation theory. [BTL2]
2. Define Gene editing. [BTL1]
3. Define Linkage. [BTL1]
4. How would you describe the genetic mechanisms that contribute to antibiotic resistance in bacteria? [BTL3]
5. Analyse the features of the double strand break repair model. [BTL4]
6. Explain the factors affecting competency. [BTL2]
7. How does incomplete dominance influence phenotypic ratios in offspring? Illustrate it with a Punnett square. [BTL3]

**Part B**

*Short essay-type questions: Answer **any four** questions. Weightage 3 for each question.  
(4x3 = 12 Weightage)*

8. Evaluate the relationship between non-disjunction and genetic disorders. [BTL5]
9. Explain the process of Germinal crossing over. [BTL2]
10. Analyse the key features and significance of chromosomal deletions. [BTL4]
11. Analyse the significant features of pedigree chart denoting familial hypophosphatemia .Mention the trait exhibited. [BTL4]
12. Describe various steps involved in Hfr-F Conjugation. [BTL1]
13. What is dominant and recessive epistasis? Give examples. [BTL1]
14. Compare the Inheritance of Mitochondrial DNA and Chloroplast DNA. [BTL4]

**Turn Over**

### Part C

*Essay-type questions: Answer **any two** questions. Weightage 5 for each question.  
(2x5 = 10 Weightage)*

15. Explain briefly the types of chromosomal mutations. [BTL1]
16. Explain Mendel's Law of Segregation and Law of Independent Assortment. [BTL2]  
Explain with suitable examples.
17. Distinguish between X- linked autosomal and X-linked recessive traits with [BTL3]  
suitable examples.
18. Analyze the role of environment and hormone in controlling sex determination. [BTL4]

\*\*\*\*\*