

**Third Semester FYUGP Degree Examination NOVEMBER
2025**

KU3DSCBTC202 - GENETICS

2024 Admission onwards

Time : 1.5 hours

Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. What are lethal genes?
2. What are Mendel's factors and how are they related to genes?
3. Why are X-linked recessive disorders more common in males than females?
4. Define Y-linked (holandric) inheritance.
5. Who first discovered complementary gene interaction?
6. Name the enzyme complex that facilitates the crossing over process.
7. Mention any two reasons why Mendel chose *Pisum sativum* for his experiments
8. What is Self fertilisation in Pea plants ?

Section B

Answer any 4 questions. Each carry 6 marks.

9. In maize, genes A and B are complementary for seed colour. What F₂ ratio is expected?
10. Elucidate different types of epistasis.
11. Discuss the evolutionary significance of crossing over.
12. Mendel observed no "blended" traits in F₁. What does this suggest about the nature of hereditary units (genes)? Explain with evidence from his observations.
13. Differentiate between test cross and back cross with suitable genetic examples. How do their outcomes differ in terms of genotypic ratios?
14. Why is a test cross considered a useful genetic tool? Support your answer with an example.

Section C

Answer any 1 questions. Each carry 14 marks.

15. Conduct a comparative analysis of Mendelian and Non-Mendelian patterns of inheritance using genetic crosses.
16. Construct a case study to demonstrate how Y-linked inheritance is restricted to father-to-son transmission.