

**Third Semester FYUGP Degree (Reg) Examination November  
2025**

**KU3DSCBTC202 - GENETICS**

2024 Admission onwards

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Time : 1.5 hours

Maximum Marks : 50

**Section A**

**Answer any 6 questions. Each carry 2 marks.**

1. What was the outcome of Mendel's back cross?
2. Define the terms allele and locus
3. How do alleles segregate during gamete formation?
4. Write a note on Gregor Mendel.
5. In duplicate gene interaction, which phenotypic ratio is usually produced in F<sub>2</sub> generation?
6. What is a linkage group?
7. Why are most sex-linked characteristics X-linked rather than Y-linked?
8. Differentiate between sex-limited and sex-influenced traits with examples.

**Section B**

**Answer any 4 questions. Each carry 6 marks.**

9. Elucidate different types of epistasis.
10. Explain how epistasis can be useful in plant breeding?
11. Differentiate between: (a) Linkage and Independent Assortment  
b) Parental and Recombinant phenotypes.
12. Show by an example how an affected father with an X-linked dominant trait passes the disorder to his daughters.
13. What is non-disjunction? Explain its role in causing aneuploidy conditions like Down syndrome and Turner syndrome.
14. Analyze how the same genotype for a trait like baldness can produce different phenotypes in males and females.

**Section C**

**Answer any 1 questions. Each carry 14 marks.**

15. Explain the inheritance of two traits using a dihybrid cross. Include step-by-step Punnett square, genotypic and phenotypic ratios.
16. Design a genetic cross to demonstrate incomplete dominance in a plant species of your choice.