(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2023 ONLY)

23UBY508

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2025

B.Sc.-BOTANY **MAXIMUM MARKS: 75**
SEMESTER: V **TIME : 3 HOURS**

PART - III

GENETICS & EVOLUTION

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLE CHOICE QUESTIONS. (K1)

1. Who is considered the "father of genetics"?

   a) Thomas Hunt Morgan b) Gregor Mendel c) Alfred Sturtevant d) James Watson

2. Which of the following is a classic example of polygenic inheritance?
   a) Skin colour in humans b) Blood groups c) Flower colour in peas d) Stem height in peas

3. What is the significance of crossing over?

   a) It ensures the accurate segregation of chromosomes b) It increases genetic variation in offspring

   c) It is essential for DNA replication d) It helps in the formation of the spindle fibers

4. Which of the following is responsible for the storage of genetic material?
   a) DNA b) RNA c) Proteins d) Ribosome

5. Name the enzymes which is involved in photoreactivation?

   a) DNA ligase b) DNA polymerase c) DNA photolyase d) DNA glycosylase

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. (K2)

6. Define test cross.
7. Define Complementary gene.
8. Interpret the applications of Crossing over.
9. Define codon.
10. Give examples for physical and chemical mutagens.

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Describe the monohybrid cross with respect to pea plant.

(OR)

b) Differentiate between test and back crosses.

(CONTD…….2)

12. a) Compute complementary gene interaction.

(OR)

b) Briefly explain the supplementary gene interactions.

13.a) Discuss the mechanism of Linkage with suitable example.

(OR)

b) Outline the Sex determination by chromosome with an example.

14.a) Explain MacLeod and Mc Carty experiments.

(OR)

b) Describe the properties of Genetic code.

15.a) Discuss the various types of physical mutagens.

(OR)

b) Show the Significance of polyploidy.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Summarize dihybrid cross with respect to pea plant.

(OR)

b) Comment on Incomplete Dominance with example.

17. a) Explain in detail the poly genic inheritance with suitable example.

(OR)

b) Outline ABO blood grouping in man and its importance in transfusion.

18. a) Summarize the different phases of Meiosis. Add a note on its significance.

(OR)

b) Illustrate Sex linked Inheritance with suitable example and its characteristics

19. a) Outline the Prokaryotic gene regulation - lac operon.

(OR)

b) Comment on the Eukaryotic gene expression and regulation.

20.a) Point out various DNA repair mechanisms.

(OR)

b) Explain the salient features of Darwinism and Hugo de Vries theory.

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ETHICAL PAPER