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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

22UBY508

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2024

COURSE NAME: B.Sc.-BOTANY **MAXIMUM MARKS: 50**

SEMESTER: V **TIME : 3 HOURS**

PART - III
GENETICS AND EVOLUTION

SECTION – A (10 X 1 = 10 MARKS)

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

1. What is the basic unit of heredity that is passed from parent to offspring?
   a.Chromosome b. Gene c. Allele d. DNA

2. If an organism has two identical alleles for a specific trait, it is called_____.
   a. Heterozygous b. Homozygous c. Hemizygous d. Polygenic

3. Transmission of genetic material that is located outside the nucleus is_____.
   a. Cell inheritance b. Chromosomal inheritance
   c. Cytoplasmic inheritance d. Genetic inheritance

4. The genetic code consists of _____.
   a. Codons b. tRNA c. rRNA d. mRNA

5. A sudden heritable change in DNA is called a _____.
   a. DNA replication b. DNA repair c. DNA damage d. Mutation

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

6. Define phenotype
7. What is gene?
8. List the advantages of meiosis
9. Distinguish DNA from RNA
10. Define evolution.

SECTION – B (5 X 3 = 15 MARKS)

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

11. a) Explain the law of dominance in pea plants.

(OR)

b) Determine the genotype of an individual using test cross.

12.a) Write a short note on complementary gene.

(OR)

b) Identify the importance of duplicate genes in genetics and evolution.

(CONTD……2)

13.a) Summarize the process of chloroplast inheritance.

(OR)

b) Brief the over view of hormonal sex determination.

14.a) Interpret the concept of RNA as a genetic material.

(OR)

b) Infer the properties of genetic code.

15.a) Assess the mutagenic agents causes mutation.

(OR)

b) Outline the significance of polyploidy.

SECTION – C (5 X 5 = 25 MARKS)

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

(K4 (Or) K5)

16.a) Define monohybrid cross, test cross and back cross.

(OR)

b) Demonstrate the dihybrid cross.

17.a) Analyze the flower color in plants using supplementary genes.

(OR)

b) Examine the inheritance of multiple alleles using blood grouping.

18. a) Explain the process of meiosis.

(OR)

b) Assess the types of sex linkages.

19.a) Criticize the concept of DNA as a genetic material.

(OR)

b) Evaluate the process of gene expression in prokaryotes .

20.a) Interpret the DNA repair mechanisms.

(OR)

b) Judge the evolutionary theory of natural selection and mutation.

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