

BOTANY Paper-B

(Genetics)

Max. Marks : 36

Time : 3 Hours

Note : Attempt five questions in all. Question No. 1 is compulsory and select one question from each Unit.

1. (a) MCQ:

(i) If both the parents have O blood group the offsprings will have:

(a) A group

(b) B group

(c) AB group

(d) O group

(ii) Phenotypic ratio of a dihybrid cross is :

(a) 4:4:4:4

(b) 7:7:7:1

(c) 9:3:3:1

(d) 1:1:1:1

(iii) A cross between a heterozygous individual and a homozygous recessive parent is called :

(a) Test cross

(b) Back cross

(c) Dihybrid cross

(d) Monohybrid cross

(iv) Which of the following is not a category of chemical mutagen?

(a) Base modifying

(b) Base analogue

(c) Intercalating compound

(d) Ionising radiations.

- (v) When two pairs of genes interact to give 9 : 7 F₂ ratio they are :
- Supplementary genes
 - Complementary genes
 - Epistasis
 - Duplicating genes
- (vi) Allosomes are also called :
- Odd chromosomes
 - Sex chromosomes
 - Autosome
 - None of these
- (b) Fill in the blanks :
- Extra nuclear inheritance is controlled by genes.
 - Skin colour in man is an example of inheritance.
 - Nitrous acid does not affect Thymine because it does not contain
 - UGA, a stop signal codon refers to in mitochondria of animals and fungi.
 - Eye colour in Drosophila is controlled by alleles.
 - is the phenomenon where none of the two Mendelian factors or alleles is dominant over the other. 12×1=12

Unit-I

- Explain Mendel's Law of independent assortment. 6
- Write notes on :
 - Linkage groups 3,3
 - Linkage map 3,3

Unit-II

- Write notes on :
 - Pleiotropic genes 3,3
 - Codominance 3,3
- What is Epistasis? Briefly discuss its types giving one example of each type. 6

Unit-III

- Describe Inheritance of leaf variegation of Four O'clock plant. 6
- Write notes on :
 - Haemophilia 3,3
 - Chromosomal theory of inheritance 3,3

Unit-IV

- What are Gene mutations? Give mechanism of gene mutations. 6
- Write notes on :
 - DNA damage 3,3
 - Excision repair mechanism in *E. coli*. 3,3