# 2020-21

***Time - 3 hours***
***Full Marks – 60***

*Answer **all groups** as per instructions.*
*Figures in the right hand margin indicate marks.*
*Candidates are required to answer in their own words as far as practicable.*

## Group-A

1. Answer all questions or fill in the blanks as required. [1x8]
   a) The branch of Biology deals with study of genes, genetic variation and heredity is called _____.
   b) The $F_2$ genotypic ratio of codominance is _____.
   c) When only one chiasma is formed all along the length of a chromosome pair, the type of crossing over is _____.
   d) The phenomenon of loss or gain of chromosome in numerical figures to the complete chromosome complement is called _____.

   Express in one technical term:
   e) When a gene having more than two allelic forms, the condition is called-
   f) The pairing of maternal and paternal chromosomes of a homologous pair, the process is called-
   g) An individual with three sets of chromosome, all with same karyotype-
   h) The study of how genetic variations leads to evolutionary change-

## GROUP-B

2. Answer any Eight of the following questions within two or three sentences each. [$1\frac{1}{2}$x8]
   a) Law of dominance
   b) Somatic crossing over

c) Extra chromosomal inheritance

d) First filial generation

e) Nonsense mutation

f) Chiasma

g) Down's syndrome

h) Monoploidy

i) Gene pool

j) Speciation

## GROUP-C

3. Write notes on any eight of the followings within 75 words: [2x8]

a) Incomplete dominance

b) Sex chromosomes

c) Lethal allele

d) Significance of crossing over

e) Chromosome mapping

f) Physical mutagens

g) Genetic drift

h) Monosomy

i) Significance of polyploidy

j) Role of natural selection in population genetics

## GROUP- D

4. Answer any four questions within 500 words each. [6x4]

a) Explain the law of independent assortment of Mendel with the help of a suitable example.

b) What is polygenic Inheritance? Describe the process with an example.

c) Describe different types of linkage and the factors affecting it.

d) Define crossing over. With the help of an experiment, explain the cytological basis of crossing over.

e) What is chromosomal mutation? Explain deletion and duplication type of chromosomal aberration along with their genetic effects.

f) Briefly explain how the chemical mutagens cause mutation at molecular level.

g) Explain Hardy-Weinberg's law assuming random union of gametes in a population.

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