

Exam.Code:0002

Sub. Code: 0155

2071

B.A./B.Sc. (General) Second Semester

Botany

Paper – B: Genetics

Time allowed: 3 Hours

Max. Marks: 36

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

I. A) Choose the correct answer out of the given options:-

a) Human Blood Group B is produced by which alleles:

i) ii and i^B

ii) $I^B I^B$ and ii

iii) $I^B I^B$ and $I^B i$

iv) $I^B I^B$

b) Fruitfly *Drosophila* has 4 pairs of chromosomes, so the number of linkage groups will be:

i) 4

ii) 8

iii) 2

iv) None

c) Father of Experimental Genetics is:

i) Mendel

ii) Bateson

iii) Morgan

iv) Punnet

d) How many characters of Garden Pea were picked up by Mendel for his experiment

i) Eight

ii) Ten

iii) Six

iv) Seven

e) Who proposed the mutation theory of evolution:

i) Hugo de Vries

ii) Morgan

iii) Bridges

iv) Riddle

f) UV-Radiations leads to which type of mutation

i) Pyrimidine dimer

ii) Deamination of bases

iii) Dehydration of bases

iv) Alkylolation of bases

(6x1)

P.T.O.

(2)

B) Fill in the blanks:

- a) Cross performed between hybrid and parent recessive for the character is called _____.
- b) _____ is the equal and independent expression of the two alleles of a trait when present together in an individual
- c) Haemophilia is genetically due to presence of recessive gene, carried by _____ chromosome
- d) _____ is the mutant which is not able to prepare its own metabolites from the raw materials from outside
- e) Acridines are example of _____ type of mutagens
- f) Single base changes do not affect the overall _____ of DNA. (6x1)

UNIT - I

- II. a) Differentiate between complete and incomplete linkage?
b) Explain the cytological interpretation of Mendelism? (2x3)
- III. Discuss the Mendel's experiments and the various laws of inheritance given by him? (6)

UNIT - II

- IV. Discuss in detail the following:-
 - a) Complementary genes
 - b) Supplementary genes (2x3)
- V. Write in detail about any two allelic interactions with suitable examples? (6)

UNIT - III

- VI. Explain the following subparts:
 - a) Differentiate between the Nuclear and Cytoplasmic Inheritance
 - b) Explain the Sex-linked inheritance with suitable example (2x3)

(3)

- VII. Write note on Plastid DNA and the inheritance of plastid in *Mirabilis*? (6)

UNIT - IV

- VIII. What are mutagens? Explain various types of physical and chemical mutagens? (6)
- IX. Explain the different type of repair system in prokaryotes? (6)

x-x-x