

B. Sc. DEGREE EXAMINATION, APRIL 2022
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE : MAJOR – CORE
PAPER : GENETICS, PLANT BREEDING AND EVOLUTION
TIME : 3 HOURS MAX. MARKS: 100

SECTION - A

Answer all the questions. (18 MARKS)

I. Choose the correct answer : (5 x 1 = 5)

- In human karyotype of 47, XXY leads to
(a) Klinefelter's syndrome (b) Turner's syndrome
(c) Sickle cell anaemia (d) Down's syndrome
- Which protein product is affected by Duchenne dystrophy
(a) Leukovorin (b) Dystrophin (c) Myotropin (d) Actin
- The offspring resulting from a cross is called
(a) Progeny (b) Gametes (c) Heredity (d) Phenotype
- A gene which suppresses or masks the action of another gene at another locus is termed as
(a) Epistatic gene (b) Hypostatic gene (c) Multiple gene (d) Cumulative gene
- Survival of the fittest is the concept of
(a) Lamark (b) Darwin (c) Mendel (d) Hugo de Vries

II. Fill in the blanks: (5 x 1 = 5)

- Another name of Down syndrome is _____.
- The shape of normal RBC is _____.
- The ratio of F₂ progeny of complementary gene interaction is _____.
- Genes with different information at the same locus are called _____.
- The change in number of chromosomes which may involve loss or gain of whole set of chromosomes is called _____.

III. State Whether True or False: (3 x 1 = 3)

- Pure line selection results in heterozygosity.
- The replacement of light-coloured moth by dark coloured melanic species due to industrial smoke is called Industrial evolution.
- Obtaining improved quality is one of the objectives of plant breeding.

IV. Match the following: (5 x 1 = 5)

- | | |
|-----------------------|----------------------------|
| 14. Linkage | - Quantitative Inheritance |
| 15. Mutation | - Miller & Urey |
| 16. Organic Evolution | - Hugo de Vries |
| 17. Mulleto | - Extra chromosome |
| 18. Plasmogenes | - T.H. Morgan |

V. Answer any SIX of the following. Each answer should not exceed 50 words: (6 x 3 = 18)

19. Colour blindness
20. Co-dominance
21. Genetic counselling
22. Clonal selection
23. Complementary genes
24. Biogenesis
25. Coacervates
26. Induced polyploidy
27. Down syndrome

SECTION – B

Answer any FOUR of the following. Each answers not exceeding 200 words. (4 x 6 = 24)

28. Explain Incomplete inheritance with suitable example.
29. Discuss chromosomal aberrations and their types.
30. Describe the techniques involved in Plant Hybridization.
31. Write short notes on Sickle cell Anaemia.
32. According to Darwin, the fittest alone survive. Justify
33. Elaborate the multiple gene inheritance with respect to skin colour in man.

SECTION – C

Answer any TWO of the following. Each answers not exceeding 1000 words. (2 x 20 = 40)

34. Explain the Dominant and Recessive inheritance with suitable examples.
35. Describe the phenomenon of linkage and crossing over and its importance in gene mapping.
36. Eumerate the theory of Inheritance of Acquired Characters.
37. Reveal the methods involved in Induced Mutation Breeding.
