2023

3rd Semester Examination

BOTANY (Honours)

Paper : C 7-T

[Genetics]

[CBCS]

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***five*** of the following questions : 2×5=10

1. Distinguish between interference and coincidence with reference to crossing over.
2. What are lethal genes? Give one example.
3. What is tautomeric shift?
4. What are sex linked traits? How do they differ from sex limited traits?

P.T.O.

5. How does deamination cause mutation?

6. What is position effect?

7. What features of DNA polymerase make it a repair enzyme?

8. What is genetic drift?

Group - B

Answer any ***four*** of the following questions : 5×4=20

9. What does it mean by infectious heredity? Briefly describe the inheritance patterns of kappa particles in *Paramoecium*. 1+4

10. Distinguish between para-centric an peri-centric inversion. What are the meiotic products in each case? 3+2

11. Illustrate briefly the cytological basis of crossing over with suitable diagram. 5

12. Discuss the molecular concepts of genes. Explain amphidiploidy with example. 2+3

13. What are penetrance and expressivity? Explain pleiotropy with examples. 3+2

14. Define Hardy-Weinberg law mentioning the basic assumptions on which it is based. Name the evolutionary processes that can change allele frequencies in natural populations. 3+2

Group - C

Answer any ***one*** of the following questions : 10×1=10

15. Discuss in brief, the three major DNA repair systems. Why are X-rays a more potent mutagen than UV-radiation? What is the role of visible light in photoreactivation? 6+2+2

16. In a three point test cross ABC/abc X abc/abc following types of phenotypes were obtained among offsprings.

    ABC = 230, abc = 240, aBc = 96, AbC = 104, ABc = 138, aBC = 12, Abc = 8

    Find out the correct linear order of the genes. Calcultate the map distance between the genes and the coefficient of coincidence. 3+5+2
