B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)

Subject : Zoology

Course : CC-XII

(Genetics)

Time : 2 Hours **Full Marks : 40**

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

1. Answer *any five* questions: 2×5=10

(a) What will be the phenotypic sex of 2A+XO *Drosophila* and 2A+XO human being?

(b) What is silent mutation?

(c) Define linkage group with an example.

(d) Differentiate between sex-limited and sex-influenced trait.

(e) What is coefficient of coincidence?

(f) Differentiate between Class I and Class II transposable elements.

(g) Define transduction in bacteria.

(h) State the role of Kappa particle in extra nuclear inheritance of *Paramoecium*.

Group-B

Answer *any two* questions: 5×2=10

2. (a) Define complete and incomplete linkage. Describe the mechanism of complete linkage with an example. 1+4=5

(b) Briefly describe paracentric and pericentric inversions. 5

(c) Describe the process of inheritance of shell spiraling in snail. 5

(d) What will be the eye colour of F_1 progeny if we cross a red eyed female *Drosophila* with a white eyed male one? Mention the eye colour of F_2 progeny after crossing F_1 male and female (show the cross).

Group-C

Answer *any two* questions: 10×2=20

3. (a) What is meant by homologous recombination? Describe the molecular basis of recombination. 2+8=10

(b) Give a brief account of Nondisjunction in relation with occurrence of genetic disease. Describe the mechanism of UV light induced mutation. 5+5=10

(c) Describe the dosage compensation mechanism in *Drosophila* sp with a flow chart. Mention the significance of dosage compensation. 8+2=10

(d) Write short notes on *any two* of the following: 5×2=10

(i) Incomplete dominance and co-dominance

(ii) Significance of complementation test in bacteriophage

(iii) Transposons in bacteria

(iv) Dominant and recessive epistatis
