(b) Albinism in humans is caused by a recessive allele *a*. From marriages between people known to be carriers and people with albinism, what proportion of children would be expected to have albinism? If couple had three children, what is the chance of one with albinism and two without albinism. (5)

6. (a) With the help of any four examples elaborate human genetic disorders. (10)

(b) Explain the process of transposition in Tn3 elements. (5)

7. (a) Discuss the hybrid dysgenesis phenomenon observed in *Drosophila*. (5)

(b) Write a note on mutation induced by chemicals. (10)

Roll No. ..... Total Pages : 4

325402

May, 2023

B.Sc. (Life Science) -IV SEMESTER

Zoology IV Genetics (BLS 402)

Time : 3 Hours] [Max. Marks : 75

Instructions:

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*
4. *Draw the diagrams wherever required.*

PART-A

1. (a) Distinguish between back cross and test cross. (1.5)

(b) Define sex limited genes. (1.5)

(c) What is epistasis? (1.5)

(d) Differentiate between genetic map and physical map. (1.5)

(e) Define homoeologous chromosome. (1.5)

(f) What do you understand by LINEs? (1.5)

(g) Define composite transposons. (1.5)

(h) Distinguish between transition and transversion. (1,5)

(i) What is Robertsonian translocation? (1.5)

(j) What are mis-sense and non-sense mutations? (1.5)

PART-B

2. (a) With the help of appropriate example describe incomplete dominance and co- dominance. (10)

(b) Elaborate recessive epistasis with suitable example. (5)

3. (a) A yeast geneticist has analyzed 100 tetrads in a cross involving two genes; 60 of tetrads are parental ditype, 8 are nonparental ditype, and 32 are tetratypes.

How can you state that the two genes are linked and what is the map distance between these genes? (5)

(b) Explain the phenomenon of' material effects in coiling direction of snail's shell. (10)

4. (a) Consider m, n and o to be three recessive mutations in *Drosophila*. An Fl female heterozygous for all three loci was test crossed and the following progeny were obtained.

S.No.	Genotype	No. of Progenies
1.	+ + +	344
2.	+ + 0	106
3.	+ n +	2
4.	+ n o	68
5.	m n o	313
6.	m + o	3
7.	m n +	92
8.	m + +	72
	Total	1000

Based upon above results answer the following :

(1) State whether genes are linked or not? Give proper reason. (2)

(2) Give a diagrammatic representation of the cross. (2)

(3) Construct a map of the three genes. (3)

(4) Calculate the interference. (3)

(b) Give an account of bacterial gene transfer mechanism- transduction. (5)

5. (a) Elaborate all the three laws of Mendelian basis of inheritance. (10)