

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**B.Sc. DEGREE EXAMINATION – ADVANCED ZOOLOGY AND BIOTECHNOLOGY****FIFTH SEMESTER – NOVEMBER 2023****UAZ 5502 – GENETICS**

Date: 03-11-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A - K1 (CO1)**Answer ALL the Questions****(10 x 1 = 10)****1. MCQ**

- a) Mendel took _____ contrasting characteristics of pea plants.
(a) eight, (b) seven, (c) six, (d) five
- b) Linkage results in _____
a) Formation of more Dominant phenotype, b) Formation of more wild phenotype, c) Formation of more parental phenotype, d) Formation of more recombinant phenotype
- c) Which of the following is a classic example of point mutation?
a) Phenylketonuria, b) Sickle cell anaemia, c) Haemophilia, d) Thalassemia
- d) The number of Barr bodies in XXX is
(a) 2, (b) 3, (c) 4, (d) all the above
- e) In Lac-operon, the gene product of LacA gene is
(a) Beta-galactoside permease (b) Beta-galactoside transacetylase
(c) Beta-galactosidase (d) Beta-galactoside isomerase.

2. Fill in the blanks

- a) In higher organisms, cytoplasmic inheritance is also called _____
- b) A fully expressed allele is referred to as _____
- c) The genotype of down syndrome is _____
- d) Improvement of human race by improving the environment is called _____
- e) The enzyme that catalyzes the transposition of an IS element is called _____

SECTION A - K2 (CO1)**Answer ALL the Questions**
10)**(10 x 1 =****3. True or False**

- a) Multiple alleles arise from the same allele by mutation.
- b) Repulsion and coupling are two faces of linkage
- c) The substitution of a purine base with a pyrimidine base known as transition
Hardy-Weinberg equilibrium operates in the absence of gene mutation
- d) Lac Operon will be turned on when Glucose is enough in the medium
- e) Multiple alleles arise from the same allele by mutation.

4. Answer the following

- a) What is simple inheritance?
- b) Define Incomplete linkage
- c) What is mutagen?
- d) Comment on Edward's syndrome.

e)	What are Integrans?
SECTION B - K3 (CO2)	
Answer any TWO of the following (2 x 10 = 20)	
5.	Describe the monohybrid cross in detail.
6.	Write short notes on crossing over.
7.	Write short notes on induced mutation.
8.	Describe human karyotype.
SECTION C – K4 (CO3)	
Answer any TWO of the following (2 x 10 = 20)	
9.	Write notes on linkage.
10.	Describe the structural changes in chromosomes.
11.	Write a note on pedigree analysis.
12.	Comment on Transposons.
SECTION D – K5 (CO4)	
Answer any ONE of the following (1 x 20 = 20)	
13.	Defend the law of independent assortment with a suitable example.
14.	Summarize the chromosome map with diagram.
SECTION E – K6 (CO5)	
Answer any ONE of the following (1 x 20 = 20)	
15.	Elaborate the Hardy–Weinberg Law.
16.	Infer the Lac operon concept with neat diagram.
