

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**M.Sc. DEGREE EXAMINATION – ZOOLOGY****SECOND SEMESTER – APRIL 2023****PZO2MC03 – INHERITANCE BIOLOGY**

Date: 06-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A – K1 (CO1)**Answer ALL the questions****(5 x 1 = 5)**1. **Define**

- a) Co-dominance.
- b) Molecular markers.
- c) Heterosis.
- d) Mutagen
- e) Transposons

SECTION A – K2 (CO1)**Answer ALL the questions****(5 x 1 = 5)**2. **Fill in the blanks**

- a) Sudden reappearance of wild characters after many generations is called -----.
- b) ----- is the inducer in Lac operon.
- c) Facultative heterochromatin is found in -----.
- d) Genes which confer antibiotic resistance in bacteria are located on -----.
- e) Half chiasma is also known as -----.

SECTION B – K3 (CO2)**Answer any THREE of the following****(3 x 10 = 30)**

- 3. Explain the multiple factor hypothesis of polygenes.
- 4. Write note on inheritance of sex limited and sex influenced characters.
- 5. Explain the modes of transposition of DNA.
- 6. State the law of independent assortment and explain with an example.
- 7. Explain lethal genes with examples.

SECTION C – K4 (CO3)**Answer any TWO of the following****(2 x 12.5 = 25)**

- 8. Differentiate between dominant and recessive epistasis.
- 9. Explain double strand break repair model of recombination with diagram.
- 10. Comment on the determination of inheritance pattern using pedigree analysis.
- 11. Explain the role of molecular markers in gene mapping.

SECTION D – K5 (CO4)**Answer any ONE of the following****(1 x 15 = 15)**

- 12. Discuss the role of regulatory genes in gene expression in Prokaryotes.

13. Assume in Maize three genes A, B and C are linked in one chromosome and one parent is dominant in all the genes and another parent recessive in all genes. Find the gene order, the distance between genes and interference, if the number of offspring with genes (ABC- 245), (abc- 240), (aBc – 89), (AbC – 102), (ABc – 128), (abC -166), aBC – 12) and (Abc-18).

SECTION E – K6 (CO5)

Answer any ONE of the following **(1 x 20 = 20)**

14. “Recombination of genes takes place during crossing over”. Justify using cytological evidence.

15. “Syndromes are associated with various chromosomal aberrations”. Justify.
