# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

FIFTH SEMESTER – **NOVEMBER 2022**

**17/18UPB5MC02 – GENETICS AND PLANT BREEDING**

Date: 25-11-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

**PART – A** **(10 x 2 = 20 Marks)**

**Answer the following, each within 50 words.**

1. Define epigenetics.
2. What are lethal genes?
3. What are Multiple alleles?
4. Mention the reason for selecting *Neurospora crassa* in genetic recombination studies.
5. State the Chargaff's rule.
6. Distinguish between cistron and recon.
7. What are transposable elements?
8. Define point mutation.
9. What are purelines?
10. Define heterosis.

**PART – B** **(5 X 7 = 35 Marks)**

**Answer the following, each within 500 words; Draw diagrams and flowcharts wherever necessary**

11. (a) Give a brief note on the branches and application of genetics.

OR

(b) Explain the Law of segregation using monohybrid cross with an example.

12. (a) Give a brief account on supplementary gene interaction.

OR

(b) Explain cytoplasmic inheritance with suitable example.

13. (a) Describe various stages of DNA replication in prokaryotes.

OR

(b) Give an account on the structure and functioning of *lac* operon.

14. (a) Write an account on excision and post replication recombination repair mechanisms.

OR

(b) List out the characteristics of Down's syndrome individuals.

15. (a) Write a note on mass selection. Add a note on its merits and demerits.

OR

(b) Give a brief account of hybridization techniques in plants.

**PART – C** **(3 X 15 = 45 Marks)**

**Answer any three of the following, each within 1200 words. Draw diagrams and flowcharts wherever necessary**

16. Explain the law of Independent assortment with an example.

17. Write a detailed account on colour blindness and hemophilia.

18. Enumerate the salient features of genetic code.

19. Write an essay on different types of chromosomal aberrations.

20. Write a detailed account on polyploidy and its role in plant breeding.

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