# LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

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

FIFTH SEMESTER – **NOVEMBER 2024**

## 16/17/18UPB5MC02/UPB 5502 – GENETICS AND PLANT BREEDING

Date: 11-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

### SECTION A

**Answer ANY FOUR of the following, each within 500 words. Draw diagrams and flowcharts wherever necessary** **4 x 10 = 40 Marks**

1. Explain the Law of segregation using monohybrid cross with an example.
2. Give a brief account on complementary and supplementary gene interaction.
3. Explain extra nuclear inheritance with examples.
4. Describe the Watson and Crick model of DNA.
5. Write about the salient features of genetic code.
6. Give an account on excision repair and post replication recombination repair.
7. Write notes on pure line selection. Add a note on its merits and demerits.
8. Explain the types, causes and effects of heterosis in plants.

### SECTION B

**Answer ANY THREE of the following, each within 1000 words. Draw diagrams and flowcharts wherever necessary** **3 x 20 = 60 Marks**

9. Explain the Law of Independent assortment with an example.
10. Explain sex linked inheritance using colour blindness and haemophilia as an example.
11. Give a detailed account on the replication of DNA in Prokaryotes.
12. Describe the structure of *lac* operon. How it is regulated in the presence of repressor, inducer and glucose?
13. Describe the four different types of chromosomal aberrations.
14. Give an account on hybridization techniques in plants.