

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY & PLANT BIO-TECH.

FIFTH SEMESTER – November 2009

PB 5506 - GENETICS AND PLANT BREEDING

Date & Time: 05/11/2009 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

PART - A

(20 Marks)

Answer ALL questions

I. Choose the correct answer.

[5 x 1 = 5 Marks]

1. The cross between F₁ hybrid and recessive parent is called
a. back cross b. test cross
c. Monohybrid cross d. reverse cross.
2. Semi conservative model of DNA replication was proved by
a. Bateson and Punnet b. Meselson and Stahl
c. Watson and Crick d. Singer and Nicolson.
3. Tetrad analysis in *Neurospora* is studied to understand
a. Mitosis b. Meiosis c. Genetic recombination d. amitosis.
4. Mutagen causes damage in the
a. DNA b. RNA c. mRNA d. protein.
5. Removal of anther lobe is called as
a. bagging b. anthesis c. pollination d. emasculation.

II. State whether the following statements are true or false:-

[5 x 1 = 5 Marks]

6. Multiple alleles not always influence the same character.
7. DNA-RNA hybrid is formed during DNA replication.
8. Polysome is formed during active protein synthesis.
9. Mustard gas is a mutagen.
10. Clonal selection is adopted in plant that has unisexual flowers.

III. Complete the following:-

[5 x 1 = 5 Marks]

11. Male sterility is an example of _____.
12. DNA helicases causes the DNA to _____.
13. Initiation codon of polypeptide synthesis is _____.
14. Polyploidy is induced artificially by treating with _____.
15. Darwin proposed his theory in his work _____.

IV. Answer all, each in about 50 words.

[5 x 1 = 5 Marks]

16. What are multiple alleles?
17. Write about topoisomerism.
18. What is triplet codon?
19. What is down's syndrome?
20. What is heterosis?

PART - B

[5 x 8 = 40 Marks]

Answer any FIVE questions. Each within 350 words only: Draw diagrams and flowcharts wherever necessary.

21. Briefly describe the laws proposed by Mendel.
22. Write about sex determination in plants.
23. How it is proved that DNA is a genetic material.
24. What are transposable elements.
25. Briefly describe the types of chromosome aberrations.
26. Write about mutation.
27. Differentiate mass selection from pureline selection.
28. Summarise the findings of Darwin.

PART - C

[2 x 20 = 40 Marks]

Answer the following, each within 1200 words only. Draw diagrams and flowcharts wherever necessary.

29. a. Describe the replication of DNA and the enzymes involved in it.

[OR]

- b. Briefly describe transcription and the post transcriptional modifications.

30. a. Describe the molecular basis of DNA repair mechanism.

[OR]

- b. Briefly describe the various steps involved in hybridization technique.

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