

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – APRIL 2010

PB 5510 - GENETICS PLANT BREEDING & EVOLUTION

Date & Time: 27/04/2010 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL questions (20 Marks)

1. Choose the correct answer

(5x1 = 5)

01. Mendel's laws were rediscovered in the year
a. 1853 b. 1866 c. 1900 d. 1902
02. The transfer of information from DNA to RNA is called
a. translocation b. translation c. transformation d. transduction
03. Down syndrome is due to trisomy of chromosome
a. 20 b. 21 c. 22 d. 23
04. The removal of anthers from the female parent before the anthers burst is called
a. bagging b. anthesis c. heterosis d. emasculation
05. The Mutation Theory was proposed by
a. Darwin b. Lamarck c. Weismann d. Hugo de Vries

II. State whether the following statements are true or false

(5x1 = 5)

06. The phenotypic ratio of a monohybrid test cross is 1 : 1 : 1 : 1.
07. The genetic code is triplet in nature.
08. Mustard gas is a physical mutagen.
09. The production of pure lines in cross-pollinated plants is known as inbred.
10. The Theory of Natural Selection was proposed by Morgan.

III. Complete the following

(5x1 = 5)

11. Huntington's Disease in man is caused by a _____.
12. The nucleotide sequence containing a set of 3 bases of mRNA is called _____.
13. When the centromere is included in the inverted segment, the inversion is described as _____.
14. The Overdominance and Dominance Hypotheses explain the causes of _____.
15. According to Weismann, the germplasm produces _____.

IV. Answer the following, each within 50 words

(5x1 = 5)

16. What is epistasis?
17. Define cistron.
18. What is Deletion?
19. Write about the centres of Diversity.
20. Define Lamarckism.

PART – B

Answer the following each within 500 words. Draw diagrams wherever necessary. (5x7 = 35 marks)

21. a) Describe the inheritance of multiple alleles with a suitable example.
(OR)
b) Discuss mendelian laws of inheritance.
22. a) Compare the conservative and semiconservative models of DNA replication.
(OR)
b) Distinguish between the genetic material in prokaryotes and eukaryotes.
23. a) Give an account of substitution mutations.
(OR)
b) Write about Klinefelters syndrome.
24. a) Discuss the effects of heterosis.
(OR)
b) Explain the methods of pure line selection.
25. a) Write a note on Neo-Lamarckism.
(OR)
b) Discuss the salient features of Neo-Darwinism.

PART – C

**Answer any three questions, each answer within 1200 words. Draw diagrams wherever necessary
(3x5 = 45 marks)**

26. Discuss cytoplasmic inheritance with suitable examples.
27. Describe the study of transposable elements in plants.
28. Write an essay on polyploidy and explain its significance.
29. Explain the basic techniques of hybridization.
30. Comment on the Mutation Theory and the Synthetic Theory.

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