

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hort.)

Semester : I (New)	Term : I	Academic Year : 2011-12
Course No. : H/BOT 111	Title : Principles of Genetics and Cytogenetics	
Credits : 3(2+1)		
Day & Date : Saturday, 10.12.2011	Time : 10.00 to 13.00	Total Marks : 80

- Note :**
1. Solve ANY EIGHT questions from SECTION "A".
 2. All questions from SECTION "B" are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 a) State Mendel's laws. Explain the law of independent assortment.
b) State important plant cell organelles with their function.
- Q.2 Define linkage. State phases of linkage. Explain types of linkage.
- Q.3 Differentiate between (Any Two)
- 1) DNA and RNA
 - 2) Mitosis and Meiosis
 - 3) Qualitative and quantitative characters
- Q.4 Define gene interaction. Enlist various kinds of gene interactions with their F_2 ratios and explain supplementary gene interaction with suitable example.
- Q.5 Define mutation. Explain different types of mutation. Also explain merits and demerits of mutation breeding.
- Q.6 Write short notes on (Any Two)
- 1) Cytoplasmic inheritance
 - 2) Chromosomal aberrations
 - 3) Multiple alleles
- Q.7 a) Describe in brief Genetic code.
b) Describe the DNA structure proposed by Watson and Crick.
- Q.8 Define polyploidy. Enlist the detail classification of polyploids and explain the limitations of polyploidy.
- Q.9 Define sex determination. Enlist various theories of sex determination and explain any one with suitable example.
- Q.10 Define crossing over. Enlist different theories of crossing over and explain the factors affecting crossing over.

(P.T.O.)

SECTION "B"

Q.11 Fill in the blanks.

- 1) Meiosis is also known as _____ division.
- 2) _____ is the smallest unit of inheritance.
- 3) The shape of chromosome is determined by the position of _____.
- 4) The characters which are governed by one or few genes are called _____ characters.
- 5) The term Genetics is coined by _____.
- 6) The induction of polyploidy by using colchicines is termed as _____.
- 7) Sex chromosomes are also known as _____.
- 8) The germplasm theory was advocated by _____.

Q.12 Define the following terms .

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|----------------|---------------------|
| 1) Testcross | 5) Heterozygous |
| 2) Lethal gene | 6) Reciprocal cross |
| 3) Inheritance | 7) Pseudoallels |
| 4) Genotype | 8) Genetics |

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