MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hort.)

Semester	: I (New)	**Term**	: I	**Academic Year**	: 2013-14
Course No.	: H/BOT 111	**Title**	: Principles of Genetics and Cytogenetics		
Credits	: 3(2+1)				
Day & Date	: Saturday, 16.11.2013	**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) Define mitosis. (1)
b) Describe in detail the various stages of mitosis. (4)
c) Write down the significance of mitosis. (3)

Q.2 a) What is linkage? (2)
b) Describe the phases of linkage. (4)
c) Write down the significance of linkage in crop improvement. (2)

Q.3 a) Define mutation. (1)
b) What are the types of mutations? (4)
c) Describe the applications of induced mutations in crop improvement. (3)

Q.4 a) Define gene interaction. (1)
b) Enlist different types of gene interaction and its ratios. (3)
c) Explain any one with suitable example. (4)

Q.5 a) Describe the DNA structure proposed by Watson and Crick.
b) Define cell. State important cell organelles present in plant cell with their functions.

Q.6 a) What is structural chromosomal change? What are different types of structural chromosomal changes?
b) What is duplication? Explain the types of duplication.

Q.7 a) State the Mendel's Laws of Inheritance. Explain the law of segregation.
b) What are the different characters studied by Mendel in Garden Pea?

Q.8 Write a short notes on: (Any Two)
a) Reasons for Mendel's successes
b) Crossing over
c) Incomplete dominance

Q.9 Differentiate between the following. (Any Two)
a) DNA and RNA
b) Polygenic characters and Oligogenic characters
c) Mendelian Inheritance and Cytoplasmic Inheritance

(P.T.O.)