MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hons.) Horticulture

Semester	: I (New)	**Term**	: I	**Academic Year**	: 2018-19
Course No.	: H/BOT 112	**Title**	: Principles of Genetics and Cytogenetic		
Credits	: 3(2+1)				
Day & Date	: Saturday, 15.12.2018	**Time**	: 09.00 to 12.00	**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 gene interaction. Enlist different types of gene interaction.
b) Explain complementary gene interaction with suitable example.

Q.2 a) What is cell division? Enlist different stages and sub stages of mitosis and meiosis cell division.
b) Describe the stages of mitosis cell division.

Q.3 a) What is linkage? Explain the phases of linkage.
b) Write down the significance of linkage in crop improvement.

Q.4 Write short notes (Any Two).
a) Multiple alleles
b) Cytoplasmic inheritance
c) Reasons for Mendel's success

Q.5 Differentiate between (Any Two).
a) DNA and RNA
b) Mitosis and meiosis
c) Qualitative and quantitative traits

Q.6 a) What is chromosome? Give the internal and external parts of chromosome.
b) Describe ultra structure of DNA double helical model proposed by Watson and Crick.

Q.7 a) Define genetics and state different branches of genetics.
b) Explain importance and scope of genetics.

Q.8 a) State Mendel's first law of inheritance. Why did Mendel select garden pea plant for his study?
b) Explain Mendel's first law with suitable example.

Q.9 a) What is mutation? Explain different types of mutation.
b) Define mutagen. Give classification of mutagens.

Q.10 a) What is structural chromosomal aberration? Enlist different kinds of aberration.
b) Explain in detail inversion chromosomal aberration.

(P.T.O.)

SECTION "B"

Q.11 Define the following terms.

1) Lethal gene
2) Back cross
3) Allele
4) Crossing over
5) Gene
6) Chromatid
7) Variation
8) Penetrance

Q.12 a) Write down the contribution of the following scientists.

1) S. Benzer
2) Fleming
3) Charles Darwin
4) Muller J.H.

b) Fill in the blanks.

1) A chromosome with two identical arms is called _____.
2) The theory of acquired characters was proposed by _____.
3) Manifold effects of a gene refer to _____.
4) A cross of F_1 with its homozygous recessive parent is called _____.

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