

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture Summer 2017 - 18 Examination

Semester: 2

Date: 15/05/2018

Subject Code: 20102152

Time: 10:30 am to 01:00 pm

Subject Name: Fundamentals of Genetics

Total Marks: 60

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A. Fill in the blanks. (Each of 1.00 marks)****(10)**

1. If the centromere is very near the end, the chromosome is _____.
2. Deletion leads to alteration in gene _____.
3. DNA replication takes place during _____ phase.
4. If your calculated chi-square value is less than the critical value from the table, you _____ the null hypothesis.
5. Meiosis leads to reduction in _____.
6. An individual showing an altered phenotype due to mutation are known as _____.
7. _____ is made up of glucose & galactose.
8. Factor or agent causing mutation are known as _____.
9. The position of the dark-staining are _____.
10. Interaction between two alleles of the same gene is known as _____.

B. Multiple choice type questions. (Each of 1.00 mark)**(10)**

1. Nucleus was first discovered by

a) Flemming(1822)	c) Robert Brown(1833)
b) Camillo Golgi(1832)	d) Benda(1897)
2. The daughter cells produced by meiosis are the different from mother cells in

a) Shape	c) Size
b) Chromosome number and composition	d) All of the above
3. Structural changes in chromosome cause alteration in

a) Phenotype	c) Fertility
b) Variability	d) All of the above
4. Monoploids are represented by

a) x	c) 2x
b) n	d) 2n
5. In recessive epistasis, in F₂ the phenotypic ratio of 9:3:3:1 is modified to

a) 9:3:4	c) 12:3:1
b) 9:7	d) 15:1
6. Cytoplasmic genes are found in

a) Mitochondria	c) Both
b) Chloroplast	d) Neither
7. Formation of the RNA molecule from the DNA is called

a) Transcription	c) Translation
b) Elongation	d) Replication
8. DNA is polymer of

a) Amino acid	c) Nucleosides
b) Nucleotides	d) None of the above
9. In DNA, guanine and cytosine bases are joined by

a) Double phosphate bonds	c) Double hydrogen bonds
b) Triple phosphate bond	d) Triple hydrogen bonds
10. Law of inheritance were discovered by Mendel in 1866 working with

a) <i>Drosophila</i>	c) Maize
b) Garden pea	d) <i>Neurospora</i>

Q.2 Do as Directed.

A. Define the following. (Any five)

(05)

1. Chi square
2. Heterozygous
3. Transcription
4. Genetics
5. Cell
6. Gene interaction
7. Mitosis

B. Answer the following. (Any Five)

(05)

1. Enlist steps involve in test of goodness of fit.
2. Write law of dominance.
3. Formula of chi square test.
4. Draw the labelled diagram of double helix DNA model.
5. Briefly discuss on testcross and backcross.
6. Write differences between B-DNA and Z-DNA
7. Write differences between Prokaryotic cell and Eukaryotic cell.

Q.3 Write short notes. (Any five)

(15)

1. Classification of chromosomal aberration and explain deletion in detail.
2. Explain the chloroplast in detail with appropriate figure.
3. Classification of mutation based on causes with example.
4. Write difference between Plant cell and Animal cell
5. Explain qualitative and quantitative traits
6. Explain mitochondria in detail with the appropriate figure.

Q.4 Attempt any Three/Long Questions/Example

(15)

1. Define epistatic interaction and explain recessive epistasis with example.
2. Explain cell cycle with labelled diagram.
3. What is operon ? Draw the labeled diagram of lac operon and explain positive gene regulation of lac operon in detail.
5. Enlist Mendel's law and explain law of independent assortment in detail.