

Dr. Rafiq Zakaria Campus
Maulana Azad College of Arts, Science and Commerce.

Department of Botany

(Question Bank)

Class: B.Sc. III. Semester: V

Paper Name: Cell Biology and Molecular Biology. Paper Number: XVII

UNIT 1.

1. Give an account of the structure of a typical Plant Cell
2. Describe structural peculiarities of prokaryotic organization.
3. What is Cell Wall? Describe the chemical composition, structure, origin and function of the Plant cell wall.
4. Describe the structure and function of *Endoplasmic Reticulum*.
5. Describe the structure and function of *Golgi Complex*.
6. Describe the structure and function of *Lysosomes*.
7. Describe the Ultrastructure and function of Nucleus.

UNIT 2.

1. Describe the process of Mitosis add note on its significance.
2. What is Meiosis? Describe the major features of each meiotic phase.
3. Describe in detail Prophase-I. Add a note on its significance.
4. Describe structure and function of Watson and Crick DNA double helix.
5. Describe replication of DNA.
6. Describe different types of RNA's.
7. Difference between DNA and RNA

UNIT 3.

1. Give an account of the morphology, ultrastructure and function of the chromosomes.
2. Describe structural aberration in Chromosomes.
3. Describe numerical aberration in Chromosomes.
4. Give an account of Giant chromosomes.

Short Notes:

- a. Nucleolus
- b. Cell cycle
- c. Prophase I
- d. Chiasma
- e. Z-DNA
- f. B-DNA
- g. m-RNA.
- h. r-RNA
- i. t-RNA.
- j. Telomere
- k. Heterochromatin
- l. Euchromatin
- m. Nucleosome Model
- n. Polytene Chromosome
- o. Lampbrush Chromosome
- p. Deletion
- q. Duplication
- r. Inversion
- s. Translocation
- t. Euploidy
- u. Aneuploidy

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Class: B.Sc. III. Semester: VI

Paper Name: Genetics and Biotechnology. Paper Number: XXI

UNIT 1.

1. Give a brief life sketch of Mendel and state why his name is so significant for geneticists.
2. Why did Mendel use pea as the experimental material in his hybridization experiments.
3. Define and explain Mendel's law of segregation.
4. Describe Mendel's Law of Independent assortment.
5. What is Interaction of Genes? Give detailed account of Non allelic and Non-epistatic interaction of Genes.
6. Describe Duplicate Recessive Epistasis (Complementary Gene 9:7) giving suitable example.
7. Describe Recessive Epistasis (Supplementary Gene 9:3:4) giving suitable example.
8. Describe Dominant Epistatic gene (12:3:1) interaction giving suitable example.
9. Describe Duplicate Dominant Epistatic gene (15:1) interaction giving suitable example.
10. Describe mechanism of sex determination in Man.
11. Describe chromosomal theory of Sex determination.
12. Describe sex determination in Plants with reference to *Melandrium*.

UNIT 2.

1. Describe Colourblindness and Haemophilia in Man.
2. Describe White eye colour in *Drosophila*.

UNIT 3.

1. What is genetic engineering? Describe in brief various essential techniques of genetic engineering.
2. What is recombinant DNA and how is it made?
3. Describe in detail cloning vectors?

Short Notes:

- a. Law of Dominance
- b. Law of Segregation
- c. Back Cross
- d. Test Cross
- e. Co-dominance
- f. Incomplete dominance
- g. Lethal Gene
- h. Blood group inheritance
- i. Genic Balance Theory.
- j. Holandric Gene
- k. Gynandromorphs
- l. Phenylketonuria
- m. Alkaptonuria
- n. Amniocentesis
- o. Genetic counselling
- p. Properties of Restriction Endonucleases
- q. Plasmids
- r. Bacteriophage
- s. Application of Genetic Engineering.