

B.Sc. Semester - 6 (CBCS) Examination
May/June-2021 (NEW COURSE)
Cytogenetics, Molecular-Bio.(Core)

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

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- Q.1(A) Answer very shortly (04)
- (1) State the name of cell organelle which is double membrane-bound organelle.
 - (2) Give names of scientist who involved in discovery of mitochondria?
 - (3) Which plant organelle is structurally similar to haemoglobin?
 - (4) The nucleus was discovered by?
- Q.1(B) Answer shortly (Any one) (03)
- (1) Give the functions of cell nucleus
 - (2) Shortly describe the ultra structure of cell wall.
- Q.1(C) Answer in detail (any one) (07)
- (1) Write a note on Chloroplast with diagram
 - (2) Write a note on Mitochondria with diagram
- Q.2(A) Answer very shortly (04)
- (1) Mendel did not recognize the linkage phenomenon in his experiments because.
 - (2) Coupling and repulsion are the two faces of Linkage – True or False?
 - (3) The map distance between genes A and B is 3 units, between B and C is 10 units and between C and A is 7 units. The order of the genes in a linkage map constructed on the above data would perhaps be_____.
 - (4) Drosophila has four pairs of chromosomes. How many linkage groups does it have.
- Q.2(B) Answer shortly (Any one) (03)
- (1) Explain complete and incomplete linkage.
 - (2) Explain equal crossing over
- Q.2(C) Answer in detail (Any one) (07)
- (1) Discuss Gene mutation
 - (2) Explain Hardy-Weinberg's law
- Q.3(A) Answer very shortly (04)
- (1) Who coined the term m-RNA? And up to what percentage it is present among total RNA.
 - (2) What is the role of cap in m-RNA structure?
 - (3) What do you mean by UTR in m-RNA structure? State the functions of UTR.
 - (4) Define nonsense codon.
- Q.3(B) Answer shortly (Any one) (03)
- (1) Describe DNA isolation protocol.
 - (2) Discuss mismatch repair of DNA.
- Q.3(C) Answer in detail (Any one) (07)
- (1) Describe the structure of t-RNA.
 - (2) Discuss the Lac operon concept.
- Q.4(A) Answer very shortly (04)
- (1) Give the name of the scientist who constructed first recombinant DNA and also give name of gene and source organism.
 - (2) The process of expression of foreign genes in a plant is called_____
 - (3) Name the first transgenic virus resistant plant?
 - (4) Taq DNA polymerase is enzyme used in gene cloning, from which bacteria it was isolated

- Q.4(B) Answer shortly (Any One) (03)
- (1) Give the uses of enzyme alkaline phosphatase in gene cloning methods.
 - (2) Give the uses of cloning vectors.
- Q.4(C) Answer in detail (Any one) (07)
- (1) Describe in detail : Role of Restriction Endonuclease in cloning.
 - (2) Describe in detail : Plasmid as a vector.
- Q.5(A) Answer very shortly (04)
- (1) Who invented the PCR technique?
 - (2) State the principle of electrophoresis.
 - (3) Define R_f value.
 - (4) Which types of gases are used in GC?
- Q.5(B) Answer shortly (Any one) (03)
- (1) Describe the preparation method for TLC.
 - (2) Give the application of PCR.
- Q.5(C) Answer in detail (Any one) (07)
- (1) Describe HPLC
 - (2) Describe Electrophoresis
