

B.Sc. Semester - 5 (CBCS) Examination
December - 2020 (Old Course)
GENETICS AND MOLECULAR BIOLOGY(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 any one of the following. (07)
1. Discuss Chromosomal aberration giving suitable example.
 2. Enlist names of all the three laws of inheritance proposed by the Mendel. State the third law of inheritance and discuss it with suitable example in brief.
- Q.1(B) Attempt any one. (04)
1. Discuss types of linkages with suitable example.
 2. What is Pedigree analysis? State the significance of Pedigree analysis.
- Q.1(C) Attempt any three. (03)
1. Define: Pseudo Gene
 2. What is Epistasis?
 3. Define: Hypostatic gene
 4. Define: Alleles
 5. Define: Lethal gene
- Q.2(A) Answer any one of the following. (07)
1. Describe the experiment(s) which proves DNA as genetic material for prokaryotes and viruses.
 2. Discuss the packaging of Eukaryotic DNA in detail with neat and labeled diagram.
- Q.2(B) Attempt any one. (04)
1. Write a brief note on extra chromosomal inheritance with suitable example.
 2. Enlist minimum four differences between Z form and B form of DNA.
- Q.2(C) Attempt any three. (03)
1. Draw the diagram of Central Dogma of Life.
 2. What is C-value?
 3. How much nucleotide base pair fits in the one pitch of B-DNA?
 4. Draw the structure of Cytosine?
 5. State Hardy Weinberg Law of equilibrium.
- Q.3(A) Answer any one of the following. (07)
1. Discuss in detail process of Replication in Prokaryotes.
 2. Write a detailed note on virus mediated horizontal gene transfer.
- Q.3(B) Answer any one of the following. (04)
1. Discuss in brief, mechanism of plasmid mediated horizontal gene transfer in Gram negative organisms.
 2. Write a detail note on Excision repair system for DNA repair.
- Q.3(C) Attempt any three. (03)
1. Enlist the names of method used to induce competence in the cell artificially.
 2. What is the role of com Q gene in developing competence within bacteria?
 3. Define: Autonomous transposones.
 4. What is the need of transformation in bacteria?
 5. _____ discovered the 1 st transposable element.

- Q.4(A) Answer any one of the following. (07)
1. Discuss in detail the process of Transcription in prokaryotes.
 2. Discuss in detail the process of Protein synthesis in prokaryotes.
- Q.4(B) Attempt any one. (04)
1. Enlist post transcriptional modification(s). Discuss any one in detail.
 2. Discuss the process of Attenuation in detail.
- Q.4(C) Attempt any three. (03)
1. Name the enzyme which converts AMP to AMP.
 2. What is the function of 16S rRNA in the Ribosome?
 3. Enlist minimum 2 properties of Genetic code.
 4. Draw the basic structure of Lac operon.
 5. Draw the basic structure of t-RNA.
- Q.5(A) Answer any one of the following. (07)
1. Discuss application of Genetic engineering in the field of agriculture with suitable example.
 2. Enlist names of 4 synthetic plasmids. Discuss genetic composition of any one synthetic plasmid in detail.
- Q.5(B) Attempt any one (04)
1. Write a detailed note on Blue White Selection method used for screening of clone.
 2. English basic components of BAC along with their function.
- Q.5 (C) Attempt any three (03)
1. State the significance of MCS in the vector.
 2. What is the function of Cos site Cosmid?
 3. What is the function of Adapters in Genetic engineering?
 4. State the function of Terminal transferase enzyme in Genetic engineering.
 5. English the name of methods used for screening the clones then Blue white screening.
