

B.Sc. Semester - 5 (Remedial) (CBCS) Examination
March/April-2022 (NEW COURSE)
Molecular Biology and Bio-Engineering(Core)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- Q.1(A) Write answer in short. (04)**
- a) What is the function of gyrase enzyme in DNA replication?
 - b) Define: DNA polymerases
 - c) Distinguish between lagging strand and leading strand.
 - d) What is Replisome?
- Q.1(B) Answer in Brief (any one out of two) (03)**
- a) Justify: DNA is the universal genetic material.
 - b) Discuss on methods of gene regulation.
- Q.1(C) Write a Note on (any one out of two) (07)**
- a) Composition and structure of DNA.
 - b) Griffith's Transformation Experiments.
- Q.2(A) Write answer in short. (04)**
- a) Define: Phenotype and Genotype
 - b) What is amino acid?
 - c) What is promoter sequence?
 - d) Define the process amino acid activation. Which enzyme is required for that process?
- Q.2(B) Answer in Brief (any one out of two) (03)**
- a) Discuss in detail about Regulation of lac operon.
 - b) Give a note on post translational modification.
- Q.2(C) Write a Note on (any one out of two) (07)**
- a) Write in detail on various steps Translation
 - b) Genetic code
- Q.3(A) Write answer in short. (04)**
- a) What is competent cell.
 - b) What are Transposons?
 - c) Who studied U-tube experiment to study mechanism of genetic variation?
 - d) Define recombination.
- Q.3(B) Answer in Brief (any one out of two) (03)**
- a) Discuss in detail on transposable elements.
 - b) Generalized Vs Specialized transduction.
- Q.3(C) Write a Note on (any one out of two) (07)**
- a) Bacterial Transformation.
 - b) What is transposition? Give a detail note on simple and replicative transposition?
- Q.4(A) Write answer in short. (04)**
- a) What is mutation ?
 - b) Define: hypomorphic and hypermorphic mutation
 - c) Give the two names of Chemical Mutagen.
 - d) Define SOS response system.
- Q.4(B) Answer in Brief (any one out of two) (03)**
- a) Ames's test
 - b) Give a detail note on physical mutagenesis.

- Q.4(C) **Write a Note on (any one out of two)** (07)
- a) Induced Mutation Vs Spontaneous
 - b) Write in detail: DNA repair mechanisms
- Q.5(A) **Write answer in short.** (04)
- a) What is C-DNA library?
 - b) Mention any two salient features of plasmid vector.
 - c) Write a function of DNA ligase in genetic engineering.
 - d) Define Adapters and Linkers.
- Q.5(B) **Answer in Brief (any one out of two)** (03)
- a) Discuss in detail on Blue-White colony screening method
 - b) Write a note on cosmid vector.
- Q.5(C) **Write a Note on (any one out of two)** (07)
- a) YAC Vs BAC.
 - b) Give detail note on Restriction endonucleases.
