

B.Sc. Semester - 5 (CBCS) Examination**Oct/Nov. - 2018****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.

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- Q-1(A) Answer in detail (Any one) (07)
- (1) Justify the statement “Deoxyribonucleic acid is the universal hereditary material”
 - (2) Describe the gene concept
- Q-1(B) Answer the following (Any one) (04)
- (1) Explain Replication fork.
 - (2) Discuss Incomplete dominance and codominance
- Q-1(C) Answer the following (Any three) (03)
- (1) What is split gene?
 - (2) Define Recon
 - (3) The cattle of red coat ($C^R C^R$) is crossed with white cattle ($C^W C^W$), the F_1 heterozygote state is, expressed as roan coat is called _____
 - (4) Write True or False: Prokaryotic genes are polycistronic.
 - (5) In complementation test, if the mutations are on different genes the resulting phenotype will be _____
- Q-2(A) Answer in detail (Any one) (07)
- (1) Explain Transcription and post transcriptional modifications.
 - (2) Discuss Tryptophan operon
- Q-2(B) Answer in detail (Any one) (04)
- (1) Describe elongation of translation.
 - (2) Discuss the properties of genetic code.
- Q-2(C) Answer the following (Any three) (03)
- (1) Write the pribnow sequence located at – 10 region.
 - (2) Repressor protein binds at _____
 - (3) What is codon family?
 - (4) What is catabolite repression?
 - (5) Write True/False: In arabinose operon, when the level of c-AMP is low, AraC protein act as repressor.
- Q-3(A) Answer in detail (Any one) (07)
- (1) Homologous recombination.
 - (2) Transformation and its significance

- Q-3(B) Answer in detail (Any one) (04)
- (1) Explain specialized transduction.
 - (2) Describe Conjugation in brief.
- Q-3(C) Answer the following (Any three) (03)
- (1) Give the examples of composite transposons.
 - (2) What is conjugative plasmid?
 - (3) Transposons were first discovered in _____
 - (4) Define illegitimate recombination
 - (5) What is abortive transduction?
- Q-4(A) Answer in detail (Any one) (07)
- (1) Induced mutagenesis.
 - (2) Biochemical basis of mutation
- Q-4(B) Answer in detail (Any one) (04)
- (1) Explain the mechanisms of SOS repair
 - (2) Describe Mutagenicity assay
- Q-4(C) Answer the following (Any three) (03)
- (1) Define: Phenomic lag
 - (2) What is Photo reactivation?
 - (3) Write the name of most important protein for recombination repair _____
 - (4) Give examples of intercalating agents.
 - (5) True or False: Missense mutation leads to the conversion of sense codon to nonsense codon
- Q-5(A) Answer in detail (Any one) (07)
- (1) Give overview of gene cloning.
 - (2) Explain eukaryotic gene manipulation
- Q-5(B) Answer in detail (Any one) (04)
- (1) Write a note on recombinant vectors.
 - (2) Applications of genetic engineering
- Q-5(C) Answer the following (Any three) (03)
- (1) Define: shuttle vector
 - (2) Define: chaperonins
 - (3) True or False: YAC is genetically engineered vector contains DNA of yeast and bacterial plasmid
 - (4) Give examples of restriction endonucleases use for rDNA technology
 - (5) Cosmid is a hybrid vector which can carry _____ length of foreign DNA.
