

B.Sc. Semester - 5 (CBCS) Examination

Oct/Nov. – 2019

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.
-

Question 1

Q.1 (a) Answer in detail (Any one) (07)

1. Explain the mechanism of DNA replication.
2. Describe any two Mendelian laws of inheritance.

Q.1 (b) Answer the following (Any one) (04)

1. Explain Cis trans complementation test.
2. Explain “transforming principle” experiment in bacteria.

Q.1 (c) Answer the following (Any three) (03)

1. Write the contribution of Thomas Hunt Morgan.
2. What is cistron?
3. Define split gene.
4. What is Test cross?
5. Give examples of DNA unwinding proteins.

Question 2

Q.2 (a) Answer in detail (Any one) (07)

1. Discuss regulation of lactose utilization.
2. Discuss microcycle of translation process.

Q.2 (b) Answer the following (Any one) (04)

1. Briefly explain the role of Ara C protein in Arabinose operon.
2. Describe properties of genetic code.

Q.2 (c) Answer the following (Any three) (03)

1. What is TATA Box?
2. Define Spliceosome.
3. Write Shine-Dalgarno sequence _____.
4. Tryptophan act as _____ in trp operon.
5. Write the full form of CAP.

Question 3

Q.3 (a) Answer in detail (Any one) (07)

1. Discuss the process of conjugation in gram negative bacteria.
2. Specialized transduction.

Q.3 (b) Answer the following (Any one) (04)

1. Explain Site specific recombination.
2. Explain natural transformation and its significance.

Q.3 (c) Answer the following (Any three)

(03)

1. What is insertion sequences?
2. Define relaxosome.
3. Write the examples of composite transposons.
4. _____ protein form a Holliday junction.
5. What is abortive transduction?

Question 4

Q.4 (a) Answer in detail (Any one)

(07)

1. Discuss biochemical basis of mutation.
2. Describe three DNA repair mechanisms.

Q.4 (b) Answer the following (Any one)

(04)

1. Explain chemical mutagenesis.
2. Discuss Ames test.

Q.4 (c) Answer the following (Any three)

(03)

1. What is mutation rate?
2. Base substitutions in which if purines replaces pyrimidines is called _____.
3. Define Lethal mutation.
4. What is Phenomic lag?
5. True or False: Nonsense mutation result in a change in the amino acid within polypeptide chain.

Question 5

Q.5 (a) Answer in detail (Any one)

(07)

1. Write a detailed note on Cloning vectors.
2. Applications of genetic engineering.

Q.5 (b) Answer the following (Any one)

(04)

1. Site directed mutagenesis.
2. Molecular Chaperon.

Q.5 (c) Answer the following (Any three)

(03)

1. Define: genomic library.
2. Define: reporter genes.
3. Bacteriophage λ is cloning vector which can carry _____ length of foreign DNA.
4. Enlist restriction endonucleases use for rDNA technology.
5. _____ technique use for the detection of recombinant product.
