

B.Sc. Sem.-4 (Hons.) Examinations, 2022
Subject: Biotechnology (Hons.)
Paper: CC-8 (Molecular Biology)

Time: 2 Hrs.

Full Marks: 40

1. Answer any *five* of the followings : 2 x 5 = 10

- a. Why semi conservative DNA replication is semi discontinuous?
- b. Name one method of post-replication DNA repair mechanism with justification of its post-replication activity.
- c. What is exon- shuffling?
- d. What is an inducible operon system?
- e. Point out the salient features of Z-form of DNA.
- f. What is photoreactivation repair ?
- g. What is peptidyl transferase ?
- h. How does transcriptional gene silencing occur ?

2. Answer any *two* of the followings : 5 x 2 = 10

- a. Briefly elucidate the mechanism of maintaining the fidelity of translation.
- b. Discuss the semiconservative nature of DNA replication using suitable diagrams.
- c. Enumerate the role of transcription factors in eukaryotic gene expression.
- d. Briefly discuss the different mechanisms of Posttranslational modifications of proteins.

3. Answer any *two* of the followings : 10 x 2 = 20

- a. Define genetic code. Discuss the various characteristic features of a genetic code. Why genetic code is considered universal? 2+6+2=10
- b. Discuss the mechanism of elongation and termination of polypeptide chain synthesis in eukaryotes with suitable diagram. 4+4+2=10
- c. Elucidate the mechanism of splicing of pre-mRNA. How does 5'-cap formation occur in mRNA ? 8+2=10
- d. Discuss the structural organization and mode of function of an inducible promoter. 2+8=10
