

2021-24

Full Marks : 75

Time : 3 Hours

Candidates are required to give their answer in their own words as far as practicable. Their figures in the margin indicate full marks.

Group - A
(Compulsory)

1. Choose the **correct** option for the following :
1×10=10

- (i) Full form of mRNA is :
 (a) messenger RNA
 (b) messenger Ribosome
 (c) modified RNA
 (d) None
- (ii) Okazaki fragments are synthesized during :
 (a) Transcription
 (b) Translation
 (c) Replication
 (d) None

- (iii) Phosphodiester bond is found between :
 (a) Sugar and phosphate in D.N.A.
 (b) Nitrogenous bases
 (c) Adenine and thymine
 (d) None of these

- (iv) Splicing is the removal of :
 (a) Exons (b) Introns
 (c) Both (d) None

(v) Which among the following are gene-silencers ?

- (a) Ribozymes (b) Isozymes
 (c) Co-enzymes (d) None

(vi) Operon model has been proposed by :

- (a) Watson and Crick
 (b) Leewen Hock
 (c) Darwin and Lamarck
 (d) Jacob and Monad

(vii) Shine-Dalgarno sequence is a ribosomal binding site on the mRNA found in :

- (a) Bacteria (b) Humans
 (c) Both (d) None

(viii) Globin mRNA is highly expressed in :

- (a) Erythrocytes
- (b) Leucocytes
- (c) Platelets
- (d) None

(ix) A chemical or physical agent capable of inducing change in DNA is called :

- (a) Pathogen (b) Mutagen
- (c) Teratogen (d) None

(x) Si RNA denotes :

- (a) micro RNA
- (b) Small initiating RNA
- (c) Small interfering RNA
- (d) None

2. Write short note on any **one** of the following :
1×5=5

- (i) Structure of DNA
- (ii) Transcription factors of *E. Coli*
- (iii) Split genes
- (iv) Mi RNA

Group - B

Answer any **three** of the following :

20×3=60

- 3. Discuss enzymology of DNA Replication with special reference to Prokaryotes.
- 4. Discuss the mechanism of translation in *E.Coli* with suitable diagram.
- 5. Define Operon. Discuss Lac Operon in detail with suitable diagram.
- 6. Discuss various DNA Repair Mechanisms.
- 7. What do you mean by Gene Regulation ? Discuss the principle of Transcriptional Regulation in Prokaryotes.

OR

Write in short on any **two** :

10×2=20

- (a) Genetic imprinting
- (b) Wobble hypothesis
- (c) Tryptophan operon
- (d) Splicing mechanism
