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B. Sc. (Biotechnology) Part – II Examination, 2014

BIOTECHNOLOGY

Paper : VII

(Molecular Biology)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt *all* questions from *Section – A* (Objective type), *seven* questions from *Section – B* (Short answer type) and *two* questions from *Section – C* (Long/Essay type questions).

SECTION – A [Marks : 1 × 10

1. Which ratio is constant for DNA ?

   (a) A + G/T + C (b) A + T/G + C

   (c) A + C/U + G (d) A + U/C + G

2. Intervening sequence of 'gene' are known as :

   (a) introns (b) exons

   (c) cistrons (d) codone

3. The jumping genes in maize were discovered by :

   (a) Beadle and Tatum (b) B. Mc Clintok

   (c) H. G. Khorana (d) T. H. Morgan

P. T. O.

4. Unwinding of DNA duplex is performed by an enzyme called :

(a) gyrase (b) lactase

(c) ligase (d) primase

5. During transcription, the DNA site at which RNA polymerase binds is called :

(a) enhancer (b) receptor

(c) operator (d) promoter

6. Amino acid binding site in tRNA is :

(a) 5' end (b) anticodon loop

(c) CCA 3' end (d) DHU loop

7. In genetic code dictionary, how many codons are used to code for all the 20 essential amino acids ?

(a) 20 (b) 64

(c) 61 (d) 60

8. The name of Temin and Baltimore is associated with :

(a) RNA synthesis (b) reverse transcriptase

(c) DNA polymerase (d) translation

9. In operon concept, regulator gene functions as :

(a) inhibitor (b) regulator

(c) repressor (d) all of these

10. Semi-conservative DNA replication was first demonstrated by :

(a) Taylor (b) Watson and Crick

(c) Messelson and Stahl (d) Nirenberg

SECTION – B

[Marks : 5 × 7

1. Compare contrast between B-DNA and Z-DNA.

2. Write a note on nucleosome.

3. Compare contrast between RAPD and RFLP.

4. Briefly explain the regulation of 'lac operon'.

5. Write a note on eukaryotic RNA polymerases.

6. Write a note on post-translation level regulation of a gene activity.

7. Briefly explain Maxam and Gilber method of DNA sequency.

8. Write a note on diversity of structure and function of RNA.

9. Explain the mechanism and importance of transposition.

10. Briefly explain the initiation of translation process in prokaryotes.

SECTION – C

[Marks : 15 × 2

1. Give a brief account of different steps involved in translation of mRNA into a polypeptide in prokaryotes.

2. Describe in detail the process of DNA replication in eukaryotes.

3. Give a detailed account of organization and regulation of trp operon of bacteria.

4. Write detailed notes on any *two* :

   (a) Genetic code,

   (b) Post-transcription modification,

   (c) Overlapping genes.