AT–390

B.Sc. (Part-III) Semester-V Examination

5S : BIOCHEMISTRY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

1. (A) Fill in the blanks : 2

(i) Short DNA fragments produced during synthesis of lagging strand are known as _____.

(ii) _____ is main replication enzyme in E-Coli.

(iii) The diameter of B-DNA helix is _____.

(iv) The non-coding sequences present in eukaryotic m-RNA are known as _____.

(B) Choose the correct alternatives : 2

(i) The plasmid $P^{BR\,322}$ has :

(A) Ampicillin resistance gene (B) Tetracycline resistance gene

(C) Both of the above (D) None of the above

(ii) Dideoxy analog of nucleotide is used in which of the following methods ?

(A) Sanger method (B) Maxam-Gilbert method

(C) Watson method (D) None of the above

(iii) Which one of the following is not required for translation ?

(A) Ribosome (B) m-RNA

(C) t-RNA (D) Lecithin

(iv) Which one of the following is not required for DNA replication ?

(A) dATP (B) dCTP

(C) dTTP (D) dUTP

(C) Answer in one sentence each : 4

(i) What is Shine-Dalgarno sequence ?

(ii) What is RNA splicing ?

(iii) Define transcription.

(iv) Define plasmids.

2. Discuss in brief the following :

(a) Nucleic acid as genetic information carrier 4

(b) Hershey-Chase experiment 4

(c) Salient features of eukaryotics. 4

OR

(p) Central Dogma of molecular genetics 4

(q) Structure and properties of RNA 4

(r) Basic concept about the secondary structure of nucleic acid. 4

3. What is replication ? Discuss in detail. Give inhibitors of DNA replication. 12

OR

Describe in detail about transcription in prokaryotes. 12

4. Write in short about the following :

(a) Genetic code 4

(b) Gene within gene and overlapping genes 4

(c) A & P sites in Ribosomes. 4

OR

(p) Non-sense codons and release factors 4

(q) Regulation of gene expression 4

(r) Trp operon. 4

5. Discuss in detail about sequencing of DNA and RNA. 12

OR

Describe in detail Nucleic acid hybridization. 12

6. Write in brief about :

(a) Importance of growth factors in animal cells 4

(b) History of development of cell cultures 4

(c) Transformed animal cells. 4

OR

(p) Establishment of continuous cell lines 4

(q) Growth kinetics of cell in culture 4

(r) Organ culture. 4

7. Discuss the following :

(a) Cell suspension culture 4

(b) Totipotency 4

(c) Practical application of tissue culture. 4

OR

(p) In-vitro techniques in tissue culture 4

(q) Induction of callus 4

(r) In-vitro pollination and fertilization. 4