AS–1464

B.Sc. Part–III (Semester—V) Examination

BIOCHEMISTRY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

N.B. :— (i) All questions are compulsory and carry equal marks except Question No. **1** which carries **8** marks,

(ii) Draw neat and labelled diagram wherever necessary.

1. (A) Fill in the blanks :

(i) _____ subunit of RNA Polymerase search promoter sequences. ½

(ii) _____ enzymes is coded by Lac Z gene of Lac operon. ½

(iii) Semiconservative replication of DNA was experimentally proved by _____ and _____. ½

(iv) The DNA strand which is synthesized in fragments during replication is known as _____. ½

(B) Choose correct alternative :

(i) Which of the following isotope of sulphur was used by Hershey and Chase in blender experiment ?

(a) ^{35}S (b) ^{33}S

(c) ^{36}S (d) ^{37}S ½

(ii) Which of the following virulent strains of bacteria was used by Griffith in his transformation experiment ?

(a) S–III (b) S–II

(c) R–II (d) R–III ½

(iii) DNA Polymerase–I was discovered by :

(a) Khoorana (b) Marshal Nirenberg

(c) Arthur Kornberg (d) Ramchandran ½

(iv) In bacteria the process of protein synthesis starts with :

(a) GUG (b) AUG

(c) UAA (d) AGU ½

(C) Answer in **one** sentence :

(i) Define cell culture. 1

(ii) What is cell suspension culture ? 1

(iii) What is charged t-RNA ? 1

(iv) Define genome. 1

2. Answer the following :

(a) Describe Hershey and Chase experiment. 4

(b) Explain current version of central dogma. 4

(c) Describe the features of viral genome. 4

OR

(p) Describe Watson and Crick model of double helical DNA. 4

(q) Explain base equivalence and base pairing in DNA. 4

(r) Describe clover leaf structure of t-RNA. 4

3. Explain initiation, elongation and termination of transcription in E-Coli. 12

OR

Explain in detail properties and functions of enzymes and proteins involved in replication. 12

4. Answer the following :

(a) Describe Wobble hypothesis. 4

(b) Describe regulation of TVP operon by attenuation. 4

(c) Explain termination of translation. 4

OR

(p) Explain regulation of Lac operon by CAP-cAMP complex. 4

(q) Explain the initiation of translation. 4

(r) Describe overlapping gene with example. 4

5. Describe in detail steps in recombinant DNA technology. 12

OR

Describe any two methods of DNA sequencing and add a note on Southern hybridisation. 12

6. Answer the following :

(a) Explain application of animal cell culture. 4

(b) Describe secondary cultures. 4

(c) Describe application of organ culture. 4

OR

(p) Describe growth kinetics of cell in culture. 4

(q) Describe history of animal cell culture. 4

(r) Explain importance of growth factors of serum. 4

7. Answer the following :

(a) Describe media preparation for plant tissue culture. 4

(b) Explain totipotency and cell suspension culture. 4

(c) Explain practical application of tissue culture. 4

OR

(p) Describe overt culture. 4

(q) Explain concept of in vitro pollination. 4

(r) Describe induction of callus. 4