

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

BIOCHEMISTRY

(Molecular Biology and Biotechnology)

Time—Three Hours]

[Maximum Marks—80

N.B. :— (1) All questions are compulsory and carry equal marks except question no. 1 which carries 8 marks.

(2) Draw neat and labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) A purine rich region present on m-RNA at 5' upstream of initiation codon is known as _____ $\frac{1}{2}$

(ii) Semiconservative nature of DNA replication was experimentally proved by _____ $\frac{1}{2}$

(iii) Anticodon is present on _____ $\frac{1}{2}$

(iv) The successfully clone animal is _____ $\frac{1}{2}$

- (B) Choose the correct alternative : 2
- (i) Animal cell cultures are used widely for production of : $\frac{1}{2}$
- Insulin
 - Somatostatin
 - Mabs
 - Throxine
- (ii) Which is the most common carbon source used in the plant tissue culture media ? $\frac{1}{2}$
- Sucrose
 - Glucose
 - Fructose
 - Maltose
- (iii) Which of the following is inhibitor of transcription in Prokaryotes ? $\frac{1}{2}$
- Rifampicin
 - Erythromycin
 - Penicillin
 - Tetracyclin
- (iv) Which of the following initiation factor presents binding of 50 S ribosomal subunit to 30 S ribosomal subunit during initiation : $\frac{1}{2}$
- IF₂
 - IF₁
 - IF₃
 - EF-G

7. (a) Explain any two practical application of genetic transformation in plant. 4
- (b) What are phytohormones ? Give the significance of Auxin and Cytokinins. 4
- (c) Explain ovary culture with significance. 4
- OR**
- (p) What is an explant ? How will you induce callus from it ? 4
- (q) Explain in brief cell suspension culture. 4
- (r) Explain ovule culture with significance. 4

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

- (i) Define gene. 1
 - (ii) Enlist subunit composition of RNA polymerase in E-Coli. 1
 - (iii) Define charged t-RNA. 1
 - (iv) What are non-sense codon ? 1
2. (a) Discuss Hershey and Chase experiment. 4
- (b) Write salient features of eukaryotic genome. 4
- (c) Explain T_m and its relation with G_c content. 4

OR

- (p) Explain Watson-Crick model of DNA. 4
- (q) Write in brief about m-RNA. 4
- (r) Comment on central dogma of molecular genetics. 4
3. Explain with suitable diagram initiation, elongation and termination of replication in E-coli. 12

OR

Describe post transcriptional processing of RNA in eukaryotes and add a note on RNA polymerase. 12

4. Explain with suitable diagram initiation, elongation and termination of translation in Prokaryotes. 12

OR

Explain Lac operon with its regulation and add a note on basic features of genetic code. 12

5. (a) Explain Maxam-Gilbert method of DNA sequencing. 4
- (b) Explain features of PBR 322 plasmid vector. 4
- (c) Explain role of restriction endonuclease in recombinant DNA technology. 4

OR

- (p) Explain Sanger method of DNA sequencing. 4
- (q) Explain southern blotting. 4
- (r) What is Recombinant DNA technology ? Explain in brief. 4
6. (a) Discuss different methods of disaggregation of animal tissue. 4
- (b) Write about advantage and disadvantage of adding serum in animal cell culture medium. 4
- (c) Explain in brief History of animal cell culture. 4

OR

- (p) Describe growth kinetics of cell in culture. 4
- (q) Write in brief about comonly used animal cell lines. 4
- (r) Explain primary and secondary culture. 4