

B.Sc. T.Y. (CBCS Pattern) Semester-V
USBCDST-10 (DSE-II) - Biochemistry Paper-II - Molecular Biology

P. Pages : 2

Time : Three Hours



GUG/W/24/13112

Max. Marks : 50

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- Notes : 1. All questions are compulsory.
2. All questions carry equal marks.

1. Give a detailed account of elongation and termination of DNA replication in E. Coli. **10**

OR

- a) Write a note on origin of replication. **2½**
- b) Discuss the Theta (θ) model of DNA replication. **2½**
- c) Write short note on – semiconservative nature of replication. **2½**
- d) Describe the formation of Okazaki fragments with experimental proof. **2½**

2. Discuss Mismatch and Base Excision Repair of DNA. **10**

OR

- a) Write a note on DNA polymerase I. **2½**
- b) The concept and regulation of E. Coli replication. **2½**
- c) Describe Ames test. Give its significance. **2½**
- d) Briefly describe Mut-HLS system in mismatch repair. **2½**

3. Describe in detail initiation of prokaryotic transcription. **10**

OR

- a) Describe the structure of RNA polymerase. **2½**
- b) Describe rho dependent termination transcription. **2½**
- c) Write in brief about conserved features of promoter. **2½**
- d) Explain in short – rifamycins as inhibitors of prokaryotic transcription. **2½**

4. Describe the Nirenberg-Matthaei's experiment in detail that deciphered the genetic code. 10

OR

- a) Discuss the triplet nature of genetic code. 2½
- b) Write a note on wobble hypothesis. 2½
- c) How is Shine and Dalgarno sequence essential in translation initiation? 2½
- d) Describe the mechanism of proofreading by aminoacyl-tRNA synthetases. 2½

5. Attempt **any ten** of the following. 10

- a) Who proposed the theta mode of replication?
- b) What are leading and lagging strands?
- c) What is bidirectional Replication?
- d) What is nick translation?
- e) Define Klenow fragment.
- f) Name the subunits of core polymerase III.
- g) Name one inhibitor of prokaryotic transcription.
- h) What is reverse transcription?
- i) What is promoter escape in transcription.
- j) name one amino acid other than methionine having single codon in genetic code.
- k) What are cognates?
- l) Name one unusual nucleotide in tRNA.
