

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

P. Pages : 1

Time : Three Hours



**GUG/W/22/13112**

Max. Marks : 50

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- Notes : 1. All questions are compulsory and carry equal marks.  
2. Draw diagrams wherever necessary.

1. What are the basic features of replication? Describe in detail the experiment of Meselson & Stahl for the proof of semiconservative nature of replication. **10**

**OR**

- a) Write a note on the origin of replication. **2½**  
b) Explain the rolling circle or sigma ( $\sigma$ ) replication. **2½**  
c) Discuss the termination phase of replication in E. coli. **2½**  
d) Describe the experimental proof for Okazaki fragment formation. **2½**

2. What is the function of DNA polymerase? Explain the formation of DNA polymerase III holoenzyme. Add a note on other types of DNA polymerases. **10**

**OR**

- a) Give the concept of C and D value. **2½**  
b) Write a note on mismatch repair. **2½**  
c) Discuss the process of nucleotide excision repair. **2½**  
d) Explain the direct repair mechanism. **2½**

3. Explain in detail the rho dependent and independent termination of transcription. **10**

**OR**

- a) Write a note on reverse transcription. **2½**  
b) Explain the conserved features of promoter. **2½**  
c) Explain the DNA foot printing method for the determination of length of promoter **2½**  
d) Write a note on prokaryotic RNA polymerases **2½**

4. Discuss the features of genetic code. Add a note on decipherment of the genetic code. **10**

**OR**

- a) Write a note on the wobble hypothesis. **2½**  
b) Explain in brief the structure of t-RNA. **2½**  
c) Discuss the mechanism of error correction in amino acylation. **2½**  
d) Write a note on the Shine-Dalgarno sequence. **2½**

5. Attempt **any ten** of the following.
- a) What is the role of aminoacyl synthetases? **1**
  - b) ----- is the initiation codon (Fill in the blanks) **1**
  - c) Attachment of amino acid occurs at 3' end of t-RNA – True or False? **1**
  - d) What is sense and antisense strand? **1**
  - e) Enlist the different kinds of sigma subunits. **1**
  - f) How does rifamycin Inhibit prokaryotic transcription. **1**
  - g) What is the Klenow fragment? **1**
  - h) Define the term processivity. **1**
  - i) What is the significance of Ames test? **1**
  - j) What is the role of primer? **1**
  - k) Write any single point of difference between bidirectional and unidirectional replication. **1**
  - l) The direction of formation of leading & lagging strand is ----- (Fill in the blanks) **1**

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