

**M.Sc. BOTANY**  
**SECOND SEMESTER (REPEAT)**  
**MOLECULAR BIOLOGY**  
**MSB-204**

**SET**  
**A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

Time: 15 mins.

Marks: 10

( Objective )

*Choose the correct answer from the following:*

*1 × 10 = 10*

- The eukaryotic initiation codon recognizes.....
  - f-Met-tRNA-f-Met
  - Met-tRNA<sup>i</sup>-Met
  - f-Met-tRNA<sup>i</sup>-Met
  - f-Met-tRNA-Met
- CAAT box is present in many:
  - Prokaryotic promoters are upstream of TATA box
  - Prokaryotic promoters are downstream of TATA box
  - Eukaryotic promoters are upstream of TATA box
  - Eukaryotic promoters are downstream of TATA box
- AFLP is a:
  - PCR based method
  - Method to detect polymorphism in the DNA throughout the genome
  - Method that detects the presence or absence of a fragment
  - All of these
- The variation in number of tandem repeats between two or more individuals is called:
  - Variable number of tandem repeats (VNTRs)
  - Restriction Fragment Length Polymorphism (RFLP)
  - Simple Sequence Repeats (SSRs)
  - Amplified Fragment Length Polymorphism (AFLP)
- Genetic code is:
  - The sequence of nitrogenous bases in mRNA molecule that codes for a protein
  - Is A Triplet Code
  - Is non-overlapping
  - All of these
- Which of the following enzymes remove supercoiling in replicating DNA ahead of the replication fork?
  - DNA polymerase
  - Topoisomerases
  - Primases
  - Helicases
- The second transesterification reaction occurs between.....
  - The 3' splicing site of intron and 5' splice site of intron
  - The 3' splicing site of intron and the branch point site
  - The 5' splicing site of intron and 3' end of exon
  - The 5' end of exon and the 3' splice site of exon

8. Which of the following ensure stable binding of RNA polymerase at the promoter site?
- |                    |                 |
|--------------------|-----------------|
| a. DNA photolyase  | b. Sigma factor |
| c. DNA glycosylase | d. RecA         |
9. Name the one intrinsic terminator of transcription.
- |                         |                    |
|-------------------------|--------------------|
| a. Intercalating agents | b. Rho dependent   |
| c. Rho independent      | d. Acridine orange |
10. The first RNA processing event is.....
- |             |                    |
|-------------|--------------------|
| a. Capping  | b. Polyadenylation |
| c. Splicing | d. Editing         |

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**(Descriptive)**

Time : 1 hr. 15 mins.

Marks : 25

[ Answer question no.1 & any two (2) from the rest ]

- |  |          |
|--|----------|
| 1. Write short notes on <i>any one</i> :   | 5        |
| a) Amino-acyl synthases and charging of t-RNA  |          |
| b) Structure of tRNA   |          |
| c) Genetic code  |          |
| 2. Where in the cell eukaryotic transcription occur? What is core enzyme and holoenzyme? Discuss the different types of transcription factors and the functions. | 2+4+4=10 |
| 3. Discuss the process of Spliceosome mediated splicing with proper illustrations.   | 10       |
| 4. Describe the AFLP technique and its applications.   | 8+2=10   |
| 5. What is the mechanism of translation initiation in eukaryotes with suitable diagrams?   | 10       |

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