

30/10/23  
VCD/

SYBT SEM III

SUB-MOLECULAR BIOLOGY III

2 ½ Hours

75 Marks

**NOTE:**

1. Attempt **all** questions.
2. **All questions carry equal marks.**
3. Draw **neat labeled diagrams** wherever necessary.
4. For **Q 2, Q 3 and Q 4** attempt **A and B OR C and D.**

**Q 1 Do as directed (Any fifteen)**

**15**

1. tRNA brings amino acid to \_\_\_\_\_ during translation. (ribosomes, nucleus, nuclear membrane, cell membrane)
2. A DNA strand that is ready to make an RNA strand is called the \_\_\_\_\_ strand. (template, daughter, secondary, primary)
3. Promoter sequence is always present \_\_\_\_\_ of coding sequence. (upstream, downstream, backstream, terminal)
4. The consensus sequence is generally found at the -10 region, formerly called the \_\_\_\_\_ box. (Pribnow, sense, nonsense, end)
5. The product of transcription in the eukaryotic gene is called \_\_\_\_\_ mRNA (precursor, short, long, straight).
6. Promoter proximal elements in eukaryotes at -90 consensus GGGCGG sequence is called \_\_\_\_\_ box. ("GC", sigma, replicator, terminator)
7. TFIIH's acts like \_\_\_\_\_ enzyme. (helicase, polymerase, replicase, lipase)
8. Name two functional groups present in amino acids.
9. What are the two post-transcriptional modifications that occur in tRNA?
10. What is the size of larger and smaller ribosomal subunits in eukaryotes?
11. Name three sites of translation present in ribosomes.
12. Which is the first step of elongation of translation?
13. Give examples of initiation factors of eukaryotes.
14. State true or false. Once the signal sequence is fully into the cisternal space of the ER, it is removed from the polypeptide by the enzyme signal peptidase.
15. True or false: Permease enzyme ( of lac operon ) is also called M protein.
16. What do you mean by effector molecule?
17. What is the full form of CAP?
18. Define genetic switch.
19. Enlist the proteins which are required for the establishment of lysogenic pathway.
20. Give an example of an inducible operon.

**Q 2 A** Describe in detail about elongation in the RNA chain in bacteria.

**08**

**Q 2 B** Explain the process of termination of transcription.

**07**

**OR**

**Q 2 C** Explain in detail assembly of the transcription initiation machinery in eukaryotes.

**08**

**Q 2 D** Write a note on processing of pre-mRNA to Mature mRNA. 07

**Q 3 A** Explain in detail the elongation step of translation in bacteria. 08

**Q 3 B** Discuss the initiation of translation in eukaryotes. 07

OR

**Q 3 C** Write a note on four levels of structural organization of protein. 08

**Q 3 D** Explain in detail the structure and composition of the bacterial ribosome. 07

**Q 4 A** What is the attenuation of trp operon? Explain in detail about the attenuation model of trp Operon. 08

**Q 4 B** Write a note on ara operon with positive and negative control of its regulation 07

OR

**Q 4 C** What is a genetic switch? Explain in detail about lytic pathway regulation of phage. 08

**Q 4 D** How is the lysogenic pathway established as bacteriophage? Explain in detail 07

**Q 5** Write short note on any three of the following 15

- a 5' capping in eukaryotes.
- b 3' modification in eukaryotes.
- c Polyribosome
- d Role of lac Operon enzyme
- e Trp operon