**WEEK IV- Question Bank:**

**Course:** M.Sc. Microbiology II semester

**Subject:** Molecular Biology & Microbial Genetics

**Subject Code: MICR-521**

**Subject Teacher:** Dr. Nidhi S. Belwal

**Topic (s):** Transcription in EUKARYOTES- Post transcriptional modification

Structural features of m-RNA, t-RNA & r-RNA

Inhibitors of Transcription

**Section A**

**Q1. Fill in the blanks:**

1. RNA Pol I identifies \_\_\_\_\_\_\_\_\_\_\_ promoter for transcription of rRNA.
2. 5’capping machinery is recruited by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. In eukaryotes the pincers of RNA polymerase is made up of \_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_.
4. Modification of pre-mRNA which can give rise to more than one type polypeptide product is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. At 3’end of t-RNA \_\_\_\_\_\_\_\_\_\_ sequence is conserved.
6. During the RNA splicing, binding of \_\_\_\_\_\_\_\_\_\_\_ snRNA transit A complex to B complex.
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is an enzyme which adds poly A tail to the m-RNA.
8. \_\_\_\_\_\_\_\_\_ helps in stabilizing the pre initiation complex formed by binding of RNA polymerase II and mediator proteins to other transcription factors.
9. Pause time during transcription is reduced by\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. TAT-SF1 recruits machinery for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
11. \_\_\_\_\_\_\_\_\_\_ Inhibitors interact with DNA dependent RNA polymerase and inhibit the RNA synthesis.
12. Actinomycin D is an example of \_\_\_\_\_\_\_\_\_\_\_ inhibitor of transcription.

**Q2. Give the significance of:**

1. TFIIS
2. Spliceosome
3. 5’capping
4. Alternative splicing
5. Presence of conserved sequences in pre-mRNA

**Q3. Give reason for:**

1. RNA splicing
2. Formation of branch site in intron

**Q4. Mark the correct answer:**

1. If the events in post transcriptional modification are listed as-  
   i) Polyadenylation ii) capping iii) splicing  
   What would be the correct sequence?  
   a) i->ii->iii  
   b) iii->ii->i  
   c) i->iii->ii  
   d)ii->i->iii
2. Which nucleotide is present in the 5’ cap?  
   a) ADP  
   b) GDP  
   c) CDP  
   d) UDP
3. Splicing concensus sequence is \_\_\_\_\_\_\_\_\_\_\_  
   a) Exon/GU–intron–AG/exon  
   b) Exon/UG–intron–AT/exon  
   c) Exon/GU–intron–GA/exon  
   d) Exon/AU–intron–CG/exon
4. In an experiment you try to hybridize a DNA single strand with a mature RNA. You observe loops being formed. These loops have \_\_\_\_\_\_\_\_\_\_\_\_  
   a) Dna  
   b) RNA  
   c) HIstone octamer  
   d) Histone H1
5. The 3’- OH end of the branch point A makes the attack in splicing of an intron.  
   a) True  
   b) False

**Section B**

**Q1. Explain the following schematically**:

1. Splicing pathway
2. Processing of tRNA
3. Polyadenylation
4. 5’capping

**Q2.**  The elongation, termination and processing of mRNA is interconnected. Explain.

**Q3.**  How the termination of Pol I and Pol III occurs?

**Q4.**  List the inhibitors of transcription with their mode of action