**Avinashilingam Institute for Home Science and Higher Education for Women**
**(Deemed to be University), Coimbatore-641 043**

**Master's Degree Examination – November 2018**
**I Semester**

**Class : I PG** **Time : 3 hours**
**Major : Biotechnology** **Max. Marks: 60**

**17MBTC03 Molecular Biology**

**Part A** **(10 x 1/2=5)**

**Choose the correct answer**

1. Nucleosome positioning is facilitated by----------
   a) Remodeling complex b) Topoisomerase II
   c) SMC protein d) DNA – binding protein

2.---------- types of histone molecules are found in nature.
   a) 3 b) 4 c) 5 d) 6

3. DNA replication is not affected by--------
   a) Antiparallel nature of DNA b) End specificity of polymerase
   c) SSB protein d) Helicase

4. In SOS repair system, cleavage of LexA and UmuD is mediated by ----------
   a) RecB b) RecA c) RecC d) UvrA

5. The genetic codon ------- shows ambiguity
   a) CGU b) AUG c) GAC d) UGA

6. The enzyme used for capping mRNA is a -----
   a) Kinase b) Isomerase c) Transferase d) Polymerase

7. Shine – Dalgarno sequence is also known as ----------
   a) ORF b) RBS c) Stop codon d) Start codon

8. Ubiquitin binds to the amino acid residue -------for degradation.
   a) Proline b) Lysine c) Serine d) Valine

9. The lac operon is regulated by cAMP on binding to--------
   a) Lac repressor b) Operator
   c) Promoter d) Catabolite activator protein

10. The first method for engineering CRISPR to edit in human cells was published by-----
   a) Zhang lab b) Francisco Mojica
   c) Feng Zhang d) David Liu

## Part B 5 x 4 = 20

**Answer ALL questions**

**Each answer should not exceed 200 words or one page**

11.a. Differentiate DNA and RNA viruses.

(Or)

11.b. Assemble the structure of satellite DNA.

12.a. Assess the role of replication fork in DNA replication.

(OR)

12.b. Report on point mutation.

13.a. Sketch the function of reverse transcription.

(OR)

13.b. Explain the role of RNA polymerase.

14.a. Sketch the role of protein inhibitors.

(OR)

14.b. Discuss on protein degradation by Ubiquitin pathway.

15.a. How does DNA methylation influence gene expression?

(OR)

15.b. Illustrate the impact of environmental factors in gene expression.

## Part C 5 x 7 = 35

**Answer ALL questions**

**Each answer should not exceed 600 words or three pages**

16.a. Illustrate the chromatin components and structure of eukaryotic chromosomes.

(OR)

16.b. Sketch the importance of non coding regions of the genome.

17.a. Discuss on the enzymes involved in DNA replication.

(OR)

17.b. Explain in detail the types of DNA damage and repair mechanisms.

18.a. Write about the types of post transcriptional processes that takes place in eukaryotes.

(OR)

18.b. Report on the features of Universal genetic code.

19.a. Explain the steps involved in translation of proteins.

(OR)

19.b. Describe on the post translational modification of proteins.

20.a. Sketch on the structure and regulation of Lac operon.

(OR)

20.b. Sketch on the structure and regulation of Trp operon.

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