

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore- 641043

Master's Degree Examination – November 2017

Semester I

Class: I PG

Major: I M.Sc Biotechnology

Time: 3 Hours

Max Marks: 60

17MBTC03- Molecular Biology

Part – A

10 x ½ = 5

Circle the Correct answer

1. Which one of the following is the fundamental unit of chromatin?
a) Nucleosome b) Chromatosome c) Histone d) non histone
2. Which of the following is true of histones?
a) The amino acid sequences of histone proteins are very similar in different organisms.
b) Histones are found in animal chromatin but in not in plant cells.
c) All histones form part of the nucleosome core particles in chromatin.
d) Histones are acidic proteins.
3. The co-enzyme of prokaryotic DNA lyase is
a) ATP b) NAD c) GTP d) FAD
4. DNA Polymerase was discovered in
a) 1953 b)1957 c) 1961 d) 1968
5. RNase P is involved in the processing of
a) m RNA b) t RNA c) r RNA c) Sn RNA
6. ----- is a non sense codon
a) UAU b) UAC c) UGA d) UGG

7. In eukaryotes, translation is initiated by binding of ribosome to the
 a) Pribnow box b) Hogness box c) 5'cap d) Poly A tail
8. Tetracyclin blocks protein synthesis by
 a) inhibiting binding of aminoacyl tRNA to ribosome
 b) inhibiting the initiation of translation
 c) inhibiting peptidyl transferase
 d) inhibiting translocase enzyme
9. Which is a membrane bound enzyme that transports lactose and other galactosides into the cell?
 a) galctoside permease b) β -galactosidase
 c) thiogalactoside transacetylase d) galactoside transferase
10. Attenuator is a regulatory sequence in which of the following operon
 a) lac operon b) trp operon c) both d) none

Part – B

5 X 4 = 20

Answer ALL questions

Each answer should not exceed 200 words

11. a) How are prokaryotic genomes organized?
 (OR)
11. b) Write in detail about repetitive sequences and their importance ?
12. a) Discuss about the role of different enzymes and proteins involved in prokaryotic DNA replication.
 (OR)
- 12 b) How the DNA damage could be repaired by Excision and MMR repair mechanism?
13. a) Discuss the role of RNA Polymerase III in transcription.
 (OR)
- 13 b) Explain reverse transcription & enumerate the post-transcriptional modification of processing of mRNA.
- 14 a) Enlist and explain the features of Genetic code.
 (OR)
- 14 b) Comment on signal peptidases and protein sorting.
- 15 a) Describe the structure, positive and negative regulation of *lac* operon
 (OR)
- 15 b) How CRISPR-Cas 9 mediate the Genome editing.

Part – C
Answer ALL questions
Each answer should not exceed 600 words

5 X 7 = 35

16a) Describe the process of nucleosome formation..

(OR)

16 b) Explain in detail about the importance of introns and exons of the genome.

17 a) Explain the initiation, elongation and termination process of replication in E.coli.

(OR)

17 b) Illustrate the role of Telomeres and telomerase in replication process.

17 a) How the regulatory elements involved in regulatory mechanism of Transcription?

(OR)

18.a) Describe the splicing mechanism in processing of mRNA.

18.b) What are the steps involved in synthesis of protein in prokaryotes.

(OR)

19 b) How the proteins are degraded explain with ubiquitin pathway?

20.a) Explain the positive regulation and attenuation on *trp* operon.

(OR)

20 b) How the Environmental factors influences the Gene expression ?