

**Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641 043**

**Bachelor's Degree Examination – November 2017
III Semester**

Class : II UG

Major : Biochemistry and Biotechnology

Time : 3 hrs

Max. Marks : 100

11BBC06/14BBC06 Molecular Biology

Part – A

(10x1=10)

choose

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. The length of the DNA segment present in the nucleosome core particle is
a. 146bp b. 200bp c. 166bp d. 114bp
3. DNA Polymerase was discovered in
a. 1953 b. 1957 c. 1961 d. 1968
4. The enzyme responsible for initiating DNA replication in prokaryotes is
a. DNA polymerase I b. DNA polymerase III
c. Polymerase beta d. Primase
5. What is main function of tRNA in relation to protein synthesis?
a. Proof reading b. Inhibit protein synthesis
c. Identifies amino acids and transport them to riosome d. All of these
6. _____ regulate which genes or subsets of genes are transcribed in a particular cell type
a. transcription factors b. chaperone proteins
c. RNA polymerases d. transcription is not regulated
7. The amino acids are assembled into polypeptide chain on
a. mRNA b. Nucleus c. Ribosome d. DNA template
8. A type of point mutation which could be detected only after nucleic acid sequencing is known as
a. silent mutation b. mis-sense mutation
c. non-sense mutation d. none of the above
9. Why is transposon tagging easier for X linked genes?
a. These genes are more likely to have an interesting phenotype
b. These genes are hemizygous in males
c. The transposon is more likely to insert into sites on the X chromosome
d. The X chromosome does not undergo recombination
10. Which of the following genes is not a structural gene of lac operon?
a. lac A b. Lac I c. lac Z d. Lac Y

Part – B

5x6=30

Answer the following

Answer should not exceed 400 words or two pages

11.a. Discuss about the chromosomal organization of genes.

(Or)

11.b. What is nucleosome? Describe its organization.

: 2 :

- 12.a. Describe with example the action of DNA ligases.
(Or)
- 12.b. What is SOS repair? Explain the mechanism and its significance.
- 13.a. Discuss the role RNA polymerase II and RNA polymerase III in transcription.
(Or)
- 13.b. Write a note on miRNA.
- 14.a. Justify the genetic code is degenerate.
(Or)
- 14.b. Discuss the colinearity of the gene and polypeptide.
- 15.a. Elucidate different types of Transposons.
(Or)
- 15.b. Explain the structure and functions of chloroplast.

5x12=60

Part – C

Answer the following

Answer should not exceed 400 words or two pages

- 16.a. Explain how the scientists proved that DNA as the genetic material.
(Or)
- 16.b. Give a short account on the following
i) Histones ii) Chromatin
- 17.a. Comment on initiation, elongation and termination events in prokaryotic DNA replication.
(Or)
- 17.b. Elaborate the regulation of DNA synthesis.
- 18.a. Explain Reverse transcription. What are the different activities shown by reverse transcriptase enzyme.
(Or)
- 18.b. Describe the inhibitors of transcription.
- 19.a. How protein initiation, elongation and termination take place in translation?
(Or)
- 19.b. Explain mutagenesis and their effects.
- 20.a. Discuss the structure and functions of insertion sequence elements.
(Or)
- 20.b. Describe the environmental regulation of gene expression with tryptophan operon.
