



AAN-461

Seat No. _____

B. Sc. (Sem. V) Examination

October / November - 2016

Biotechnology - 502

(CC-I-8 : Molecular Genetics)

Time : 3 Hours]

[Total Marks : 70

1 (a) MCQ : 10

- (1) What are the repeating units of nucleic acids?
 - (A) phosphate molecules
 - (B) nucleotides
 - (C) bases
 - (D) sugar molecules
- (2) The enzyme which builds a mRNA strand complimentary to the DNA transcription unit is called:
 - (A) DNA polymerase
 - (B) RNA polymerase
 - (C) Helicase
 - (D) DNA ligase
- (3) A gene is a section of DNA that codes for a protein, this unique sequence of bases will code for the production of a unique protein is:
 - (A) Exon
 - (B) Intron
 - (C) Regulatory sequence
 - (D) None of these

- (4) A _____ made inside the nucleus of a cell, associates with proteins to form ribosomes.
- (A) mRNA
 - (B) rRNA
 - (C) tRNA
 - (D) All of the above
- (5) Which of the following is correct?
- (A) A forms 2 hydrogen bonds with G; T forms 3 hydrogen bonds with C
 - (B) A forms 3 hydrogen bonds with T; G forms 2 hydrogen bonds with C
 - (C) A forms 2 covalent bonds with T; G forms 3 covalent bonds with C.
 - (D) A forms 2 hydrogen bonds with T; G forms 3 hydrogen bonds with C
- (6) Which of the following is not needed for DNA transcription?
- (A) Ribosomes
 - (B) Nucleotides
 - (C) DNA
 - (D) Enzymes
- (7) The triplet code of CAT in DNA is represented as _____ in mRNA and _____ in tRNA.
- (A) GAA, CAT
 - (B) CAT, CAT
 - (C) GUA, CAU
 - (D) GTA, CAU
- (8) If you performed a laboratory analysis of DNA, you would find that the amount of adenine is _____ the amount of thymine.
- (A) much greater than
 - (B) much less than
 - (C) about the same as
 - (D) shows no relationship to

- (9) In addition of histone protein chromatin contains an approximately equal mass of a wide variety of
- (A) Non-histone protein
 - (B) RNA
 - (C) Positive charge protein
 - (D) Unknown protein
- (10) If a protein is 300 amino acids long, then there are
- (A) 300 nucleotide bases in the DNA gene.
 - (B) 300 codons in the mRNA sequence
 - (C) 300 nucleotides in the anticodons
 - (D) 100 nucleotide bases in the messenger RNA

(b) Do as Direct :

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- (1) Give the Full Name of SSB and dNTP.
- (2) Which protein is terminating the Transcription process?
- (3) Frederick Griffith works on which bacteria for their Discovery?
- (4) Give the name of Initiation Codon for protein synthesis.
- (5) Identify the given sequence
5' AAGGCCUUACCCGGAA 3'.

2 Answer the following : (any **five**)

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- (1) Explain structure and function of RNA Polymerase in Transcription.
- (2) Explain Inducible operon in detail.
- (3) Write a note on DNA components.
- (4) Explain replication process in Eukaryotic cell.

(5) Do as Follows :

(a) Give the location of the following processes in the cell:

(i) DNA to DNA process in Prokaryotic cell

(ii) Translation occur on which organelle

(iii) Exteins and Inteins form in which area of *E. coli* cell

(iv) Genetic code present in _____.

(v) 70s Ribosome present in which organelles of plant cell

(6) Draw the labelled diagrams of Translation process.

(7) Explain the Post translation modification.

3 Answer the following : (any **three**)

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(1) Explain DNA Replication process in Eukaryotic cell.

(2) Explain genetic code with significant.

(3) Explain Translation process in Eukaryotic cell.

(4) Explain the Difference between Transcription of Prokaryotic and Eukaryotic cell.

(5) Explain the Telomeric replication.