S. Y. B. Sc. (Biotechnology) SEM – III (2010 COURSE) : WINTER - 2018

SUBJECT: MOLECULAR BIOLOGY-I

Day: Monday
Date: 29/10/2018

W-2018-1193

Time: 02.00 PM TO 05.00 PM
Max Marks: 80

N.B:

1) All questions are **COMPULSORY**.
2) Answer to both the sections should be written in the **SEPERATE** answer book.
3) Figures to the right indicate **FULL** marks.

SECTION-I

Q.1 **a)** Give important features of the genetic code. **(06)**

OR

Discuss the structure of the nucleosomes, their hierarchial packaging and composition of a core particle of a nucleosome.

b) Attempt **ANY TWO** of the following: **(10)**

i) How is a primary transcript modified in eukaryotes?
ii) Explain mutagenic effect of base analog 5- Bromouracil (5BU).
iii) Give the role of ionosine in codon-anticodon interaction of tRNA.

Q.2 Write short notes on **ANY FOUR** of the following: **(16)**

a) C-value paradox
b) Centromer
c) Mitochondrial genome
d) Different forms of DNA
e) Chromosome banding

SECTION-II

Q.3 **a)** Give the structure of the five nucleotides. How are they linked to form nucleic acid? **(06)**

OR

Give the molecular structure of hydrogen bonding between AT and GC. Which would be the hardest to break? Why?

b) Attempt **ANY TWO** of the following: **(10)**

i) Draw dinuclcotide formed from dATP and dCTP.
ii) Draw cloverleaf structure of tRNA and explain the role of tRNA as an adapter molecule.
iii) Define: Non-sense mutations, missense mutations, silent mutations, backward mutations, transversion mutations.

P.T.O.

Q.4 Attempt **ANY FOUR** of the following: **(16)**

a) Explain the Hershey and Chase bacteriophage experiment to prove DNA as genetic material.

b) The percentage of cytosine in DNA is 17%. What is the percentage of adenine, thymine and guanine in that DNA?

c) Nucleic acid associated from 2 species A and B show the following percentage of bases.

Species	Adenine	Guanine	Thymine	Gytosine	Urail
A	21	21	29	29	0
B	21	29	0	21	29

For each species, what type of nucleic acid is involved? Is it a double or a single stranded molecule? Explain your answer.

d) Describe various phases of meiotic division.

e) Describe different types of RNA.

Q.5 Attempt **ANY FOUR** of the following: **(16)**

a) What is unique and repetitive DNA? What is their significance?

b) Justify: There is no co-relation between gene size and mRNA size in higher eukaryotes.

c) Describe the post translational processing of eukaryotic mRNA.

d) Discuss properties of DNA.

e) Differentiate between prokaryotic and eukaryotic mRNA.

* * * * *