S. Y. B. SC. (BIOTECHNOLOGY) SEM – III (CBCS - 2015 COURSE) :**WINTER - 2017**

SUBJECT: PRINCIPLES & TECHNIQUES IN MOLECULAR BIOLOGY

Day : **Monday** Time : **10.00 AM TO 01.00 PM**

Date : **06/11/2017** **W-2017-0941** Max. Marks: 60

N.B.

1) Q.1 and Q.5 are **COMPULSOY.** Answer any **TWO** questions each section.
2) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION – I

Q.1 Attempt any **FIVE** of the following: **(10)**

a) What is hypochromicity?
b) How phosphodiester bonds are formed in DNA?
c) Draw the structure of Adenine and Thymine.
d) What is C value?
e) Define mutation rate. What is the frequency of mutation?
f) What is *anti* and *syn* conformation?

Q.2 Attempt the following questions: **(10)**

a) Explain the structure of mRNA.
b) What are base modifying agents? Explain its effect on DNA.

Q.3 Explain the following: **(10)**

a) Discuss the features of genetic code in brief.
b) Explain the features of A, B and Z forms of DNA.

Q.4 Write short notes on any **TWO** of the following: **(10)**

a) Telomere
b) Repetitive DNA
c) Role of topoisomerase I

SECTION – II

Q.5 Attempt any **FIVE** of the following: **(10)**

a) What are pseudogenes?
b) What are tandem repeats?
c) What is Heterochromatin?
d) What is role of histone and non-histone proteins?
e) What is the role centromere?
f) What are start and stop condons?

Q.6 Attempt the following: **(10)**

a) How positive and negative supercoils are formed in DNA?
b) Explain Chromatin Immuno-Precipitation Technique in brief.

Q.7 Write short notes on : **(10)**

a) Real time quantitative PCR
b) Clusters, repeats and satellite DNA sequences

Q.8 Give an account on: **(10)**

a) Mitochondrial genome
b) Sanger's DNA sequencing

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