

**S. Y. B. SC. (BIOTECHNOLOGY) SEM – III (CBCS - 2015  
COURSE) : WINTER - 2017  
SUBJECT: PRINCIPLES & TECHNIQUES IN MOLECULAR BIOLOGY**

Day : Monday  
Date : 06/11/2017

**W-2017-0941**

Time : 10.00 AM TO 01.00 PM  
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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