M. SC. BIOINFORMATICS SEM.-I (C.B.C.S.) (2013 COURSE) / ADVANCED DIPLOMA IN BIOINFORMATICS SEM.-I (C.B.C.S.) (2013 COURSE) : SUMMER - 2018
SUBJECT: BASIC BIOSCIENCES

Day : **Wednesday**
Date : **04/04/2018**   **S-2018-1121**

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 60

N.B.:

1) **Q.No.1** and **Q. No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in **SEPARATE** answer books.
3) Draw neat labelled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1   Explain why?   **[10]**
   a) GC% of an organism is very important.
   b) Microorganisms are smarter to protect themselves.
   c) Expression of a protein can change without changing the sequence.
   d) Intestinal bacterial flora is helpful in digestion.
   e) Introns can be used as genetic markers.

Q.2   Draw neat labeled diagrams of the following: **(ANY TWO)**:   **[10]**
   a) Mitosis   **b)** Meiosis   **c)** Cell cycle

Q.3   Write short notes on **ANY TWO** of the following: **[10]**
   a) Na+ / K^+ pump
   b) Actin filaments
   c) Plasmodesmata

Q.4   Answer **ANY TWO** of the following: **[10]**
   a) Explain the different forms of DNA and RNA with examples. Draw their respective diagrams.
   b) What are promoter, operator and enhancer sequences? Explain their importance with example.
   c) Explain briefly Genetic Code. Enlist all its features.

SECTION – II

Q.5   Define: **[10]**
   a) Mendel's law of segregation
   b) Nucleoid and Nucleosome
   c) Chromosome banding
   d) Signal transduction
   e) Desmosomes and hemi-desmosomes

Q.6   Write short notes on **ANY TWO** of the following: **[10]**
   a) Extra Chromosomal Genomes
   b) Prokaryotic Genome Organization
   c) Chromatin, Euchromatin and Heterochromatin

Q.7   Answer **ANY TWO** in brief: **[10]**
   a) Explain homologous and site-specific model of recombination.
   b) Describe Eukaryotic DNA replication process with a diagram.
   c) Describe all known DNA repair systems.

Q.8   Write in detail about post-transcriptional modification and RNA splicing   **[10]**
   reactions.
OR
   Describe structure of RNA polymerase, its role and different subunits functions in detail.

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