

**ADVANCED DIPLOMA IN BIOINFORMATICS SEM.-II**  
**(C.B.C.S.) (2013 COURSE) : SUMMER - 2018**  
**SUBJECT: ADVANCED BIOINFORMATICS**

**Day: Wednesday**  
**Date: 04/04/2018**

**S-2018-1136**

**Time: 02.00 PM TO 05.00 PM**  
**Max. Marks: 60**

**N.B:**

- 1) **Q. No. 1 and Q. NO. 5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** from each sections.
- 2) Answer to both the sections should be solved in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

**SECTION-I**

- Q.1** Define: (10)
- a) Bayesian modeling
  - b) Supervised Genetic algorithm
  - c) HMM for classification of proteins
  - d) Neural Network
  - e) Probabilistic framework
- Q.2** Write short notes on: (10)
- a) Dynamic programming
  - b) Machine learning algorithms
- Q.3** Answer the following: (10)
- a) How do you analyze the data by using microarray technology? State the recent advancement in this field?
  - b) Explain the different approaches used for operon prediction. Enlist two online tools for it with their applications.
- Q.4** Explain any two protein structure prediction algorithms in detail. (10)

**OR**

Explain the methodology, principal, applications and drawbacks of metabolic pathway engineering.

**SECTION-II**

- Q.5** Explain the following terms: (10)
- a) Sensitivity and specificity
  - b) Local and global alignment
  - c) Identify and similarity
  - d) Paralogous and orthologous genes
  - e) True positive and false negative
- Q.6** Write short note on: (10)
- a) Dot plot
  - b) Scoring matrices
- Q.7** Answer the following: (10)
- a) Explain in brief any one genome alignment method.
  - b) Explain the applications of gene predication algorithms.
- Q.8** Explain in detail supervised and unsupervised genetic algorithms with example. (10)

**OR**

Describe gene prediction and operon prediction algorithm in brief. Enlist their applications respectively.

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