

- N.B. (1) All questions are compulsory.  
 (2) Draw **diagram** where **necessary**.  
 (3) Answer to every new question must be written on a new page.

Q.1. **One marks questions:** (1\*12= 12 M)

- a) Write full form of CATH and SCOP.
- b) Give detail of any one tool used for protein classification?
- c) Is Mathews correlation coefficient a protein prediction tool? If not then why it is used?
- d) Explain applications of SWISSPDB VIEWER.
- e) Dali or vast  
Which tool is better and why?
- f) What is temperature factor in PDB file format explain.
- g) Explain Z score output in protein comparison.
- h) Write formula for Q3 prediction.
- i) Explain term Synteny.
- j) Describe segment overlap.
- k) Rosetta is used for.....
- l) Draw HMM for prokaryotic gene prediction.

- Q.2. (a) Give details of Q3 accuracy method. Enlist its advantages and applications. 6
- (b) Explain Chou- Fasman method for protein secondary structure prediction in detail. 6

**OR**

- (c) Explain third generation method for secondary structure prediction with example of one tool. 6
- (d) Describe GOR method for protein secondary structure prediction. 6

- Q.3. (a) Enlist and describe in short all 3 methods for protein tertiary structure prediction. 6
- (b) Write all comparison between the two protein structure classification databases. 6

**OR**

- (c) Give details about HSSP and FSSP database in brief. 6
- (d) Write a note on *Ab initio* and threading method for protein tertiary structure prediction. 6

- Q.4. (a) What are mutations? Explain its types? Give examples of 2 diseases caused by mutations. 6
- (b) Describe OMIM database. 6

**OR**

- (c) Give details of any one strategy for disease gene identification. 6
- (d) Draw and explain schematic representation of elements involved in bacterial transcription initiation. Describe working of one tool by which prokaryotic gene can be predicted. 6

- Q.5. (a) What are Markov model and its various orders? Explain with example construction of HMM. 6
- (b) Describe gene prediction in prokaryotes using HMM. 6

**OR**

- (c) What are markov models? Explain HMM and IMM with duration and their differences. 6
- (d) Explain generalized pair HMM used for gene prediction. 6
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