JAP-1603220001030200 Seat No. _____

B. Sc. (Bioinformatics) (Sem. III) (CBCS) Examination

November - 2019

BI - 302 : Algorithms in Bioinformatics

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.

(2) The right side figure indicate total marks of the question.

1 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) **4**

(1) The time complexity of binary search algorithm is _____.

(2) If A[mid] < X then X is present from _____ to _____ position.

(3) What is the best case of binary search ?

(4) Analogical inference is a form of _____.

(b) Answer any **one** of the following questions : **2**

(1) Define Searching.

(2) Define Sorting.

(c) Answer any **one** of the following questions. **3**

(1) Write any five uses of algorithm.

(2) Explain algorithms complexity.

(d) Answer any **one** of the following questions : **5**

(1) Explain Running time of an algorithm.

(2) Explain Binary search algorithm with example.

2 (a) Answer the following short questions : (all compulsory) 4

(1) _____ is a process of solving new problems based on the solution of similar past problem.

(2) During which stage, the content of working memory is compared to facts and rules contained in the knowledge base ?

(3) To diagnose faults in physical activities, such as electronic circuit or electronic motors, it is necessary to _____ the behaviour.

(4) The back propagation learning algorithm can be divided into two phases _____ and _____.

(b) Answer any **one** of the following question : 2

(1) Define Version space.

(2) Define Bias.

(c) Answer any **one** of the following question : 3

(1) Explain types of learning.

(2) Explain types of inference.

(d) Answer any **one** of the following question : 5

(1) Explain decision tree algorithm with example.

(2) Write a short note Unsupervised learning.

3 (a) Answer the following short questions : (all compulsory) 4

(1) Instance-based learning is a kind of _____.

(2) What is another name of quick sort ?

(3) Which theory is most deeply explored in human cognitive science ?

(4) Knowledge is acquired through _____.

(b) Answer any **one** of the following question : 2

(1) Define Models.

(2) Define Graph.

(c) Answer any **one** of the following question : **3**

(1) Differentiate Supervised learning V/s Unsupervised learning.

(2) Differentiate Feed forward V/s Feedback network.

(d) Answer any **one** of the following question : **5**

(1) Explain nearest neighbour algorithm with example.

(2) Explain back propagation algorithm.

4 (a) Answer the following short questions : (all compulsory) **4**

(1) The prior occurrence of an uncertain quantity is known as _____.

(2) _____ is a probabilistic classifier based on Baye's theorem.

(3) A _____ network could represent the probabilistic relationships.

(4) Who invented ANN ?

(b) Answer any **one** of the following question : **2**

(1) Concept Learning.

(2) Machine Learning.

(c) Answer any **one** of the following question : **3**

(1) List out some applications of neural networks.

(2) Explain undirected graph.

(d) Answer any **one** of the following question : **5**

(1) Explain Bayesian inference.

(2) Write a short note on conditional probability.

5 (a) Answer the following short questions : (all compulsory) **4**

(1) Which is an important application of neural networks ?

(2) Write any two applications of Graphical models ?

(3) How many types of Graphical models are present in rule based expert system ?

(4) What is the use of Graphical models ?

(b) Answer any **one** of the following question : **2**

(1) Define polytrees

(2) Define models

(c) Answer any **one** of the following question : **3**

(1) What are the applications of Markov graphs ?

(2) Explain general learning difficulties.

(d) Answer any **one** of the following question : **5**

(1) Write a short note on Hopfield network.

(2) Write a short note on algorithms for learning probabilistic network.
