



HDP-1603220001030200 Seat No. _____

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

November / December – 2017

BI - 302 : Algorithms in Bioinformatics
(*New Course*)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) The right side figures indicates 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 $A[\text{mid}] < X$ 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 question : 2
- (1) Linear search
- (2) Sorting
- (c) Answer any **one** of the following questions : 3
- (1) Write any five uses of algorithm.
- (2) What are the applications of case-based reasoning.
- (d) Answer any **one** of the following questions : 5
- (1) Explain Running time of an algorithm.
- (2) Explain Binary search algorithm with example.

- 2** Attempt the following : **14**
- (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 backpropagation learning algorithm can be divided into two phases _____ and _____.
- (b) Answer any **one** of the following questions : **2**
- (1) Probability
 - (2) Hyponym
- (c) Answer any **one** of the following questions : **3**
- (1) Explain types of learning.
 - (2) Write any few advantages of searching algorithms.
- (d) Answer any **one** of the following questions : **5**
- (1) Explain decision tree algorithm with example.
 - (2) Write a short note : Unsupervised learning.
- 3** Attempt the following : **14**
- (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 questions : **2**
- (1) Define Bias
 - (2) Define Graph
- (c) Answer any **one** of the following questions : **3**
- (1) Differentiate supervised learning V/s unsupervised learning.
 - (2) Differentiate binary search V/s linear search.
- (d) Answer any **one** of the following questions : **5**
- (1) Explain decision tree with example.
 - (2) Explain back propagation algorithm.
- 4** Attempt the following : **14**
- (a) Answer the following short questions : (All Compulsory) **4**
- (1) The notion of version spaces was introduced by _____ in the early 1980s.
 - (2) Rule induction methods work in _____ manner.
 - (3) A _____ in concept learning or induction is the subset of all the hypothesis that are consistent with the observed training examples.
 - (4) Which paradigm is used for decision rule algorithm?
- (b) Answer any **one** of the following questions : **2**
- (1) Concept Learning
 - (2) Machine Learning
- (c) Answer any **one** of the following questions : **3**
- (1) List out some applications of neural networks.
 - (2) Explain undirected graph.
- (d) Answer any **one** of the following questions : **5**
- (1) Explain Inductive bias.
 - (2) Write a short note on Kruskal's algorithm.

- 5 Attempt the following : 14
- (a) Answer the following short questions : (All Compulsory) 4
- (1) Which is an important application of neural networks?
 - (2) To diagnose faults in physical activities, such as electronic circuit or electronic motors, it is necessary to _____ the behaviour.
 - (3) The example of drunken person (staggering person) is of which inference?
 - (4) CBR is prominent kind of _____ making.
- (b) Answer any **one** of the following questions : 2
- (1) Define Big 'O' notation
 - (2) Define version space
- (c) Answer any **one** of the following questions : 3
- (1) What are the applications of version space algorithm?
 - (2) Explain different types of learning.
- (d) Answer any **one** of the following questions : 5
- (1) Write a short note on Hopfield network.
 - (2) Explain naive Bayes classifiers.
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