P563

[5840]-104

M.Sc. (Computer Science)
CSDT-114B : ARTIFICIAL INTELLIGENCE
(2019 Pattern) (Semester - I)

Time : 2 Hours]   *[Max. Marks : 35*

Instructions to the candidates:

1) *Q.1 is compulsory.*
2) *Solve any three questions from Q.2 to Q.5.*
3) *Questions 2 to 5 carry equal marks.*

Q1) Solve any five of the following.   **[5]**
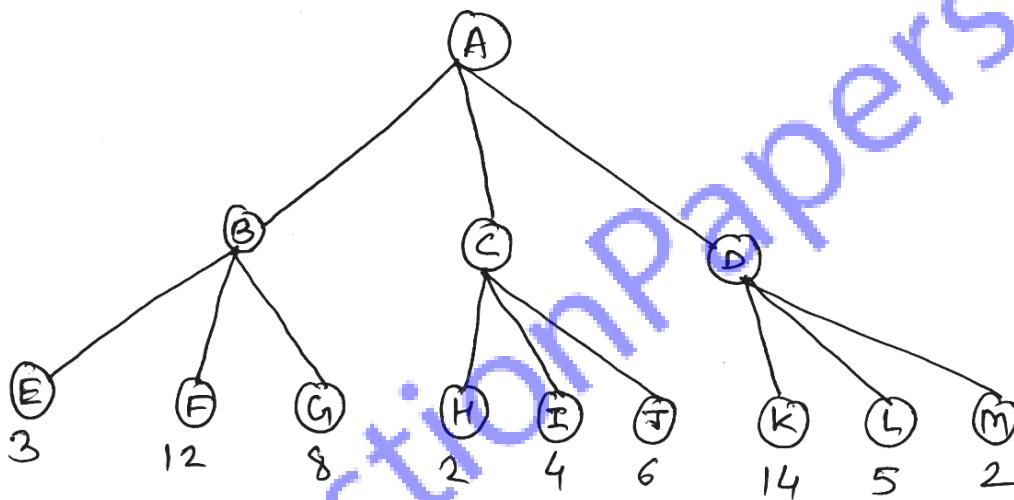
   a) List any two applications of AI.

   b) What is heuristic search?

   c) Distinguish between knowledge & data.

   d) Explain any two characteristics of a problem. With example.

   e) Define "locla maximum" that is reached when you apply hill climbing search.

   f) Translate the following FOL (first-order-logic) statement into English.

   $\forall x$: student $(x) \Rightarrow$ smart (x)

Q2) Attempt the following: **[10]**

   a) What is Reinforcement learning?   **[2]**

   b) Exlain backward chaining. Solve below example using backward chaining.   **[4]**

   i) Gita loves all types of clothes

   ii) Suits are clothes

   iii) Jackets are clothes

   iv) Anything any wear and isn't bad is clothes.

   v) Sita wears skirt & is good.

   vi) Renu wears anything Sita wears.

   c) Discuss the relation between tuples & lists tuples and dictionaries in detail.   **[4]**

Q3) Attempt the following. **[10]**

    a)   Define best first search. **[2]**

    b)   Define constraint satisfaction problem. Solve SEND+MORE=MONEY using constraint satisfaction problem. **[4]**

    c)   What is Regression? Explain different types of regression. **[4]**

Q4) Attempt the following: **[10]**

    a)   List the criteria to measure the performance of different search strategies. **[2]**

    b)   Find the best move for MAX player using minmax procedure & perform left-to-right alph-beta pruning on the tree indicate where cut offs occur.**[4]**

    c)   Write state space representation of water jug problem. We have 2 jugs of water of size 4L & 2L resp. We want 2ltr. water in 4ltr. jug.

Q5) Attempt any two of the following: **[10]**

    a)   Explain AO* algorithm with example. **[5]**

    b)   Represent following facts in First order logic **[5]**

         i)   Lucy* is a professor.

         ii)   All profeessors are people.

         iii)   Fuchs is the dean.

         iv)   Deans are professors.

         v)   All professors consider the dean a friend or don't know him.

    c)   Write a python program to check whether a given program is prime or not. **[5]**

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