Q. P. Code : 811600

**(3 Hours)**                                    **Total Marks : 80**

N.B.  1. Question No. **1** is **compulsory**
2. Attempt any three (3) out of remaining five (5) questions
3. Assume suitable data if **necessary** and **justify** the assumptions
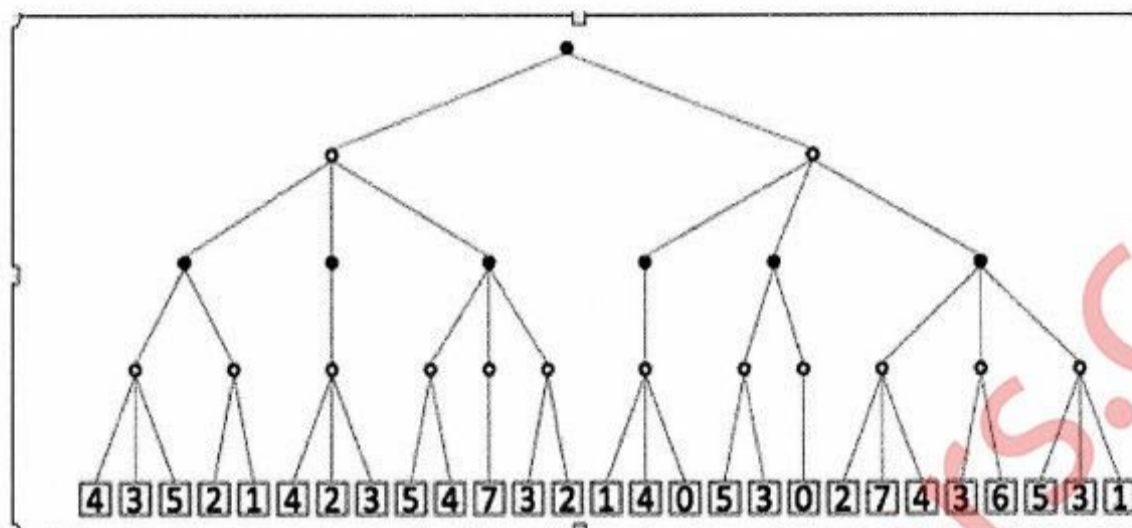4. Figures to the **right** indicate full marks

Q1          Attempt an four (4) from the following
[A]     Define AI. What are applications of AI?                                         [05]

[B]     Define heuristic function. Give an example heuristics function for 8-      [05]
puzzle problem. Find the heuristics value for a particular state of the
Blocks World Problem.

[C]     Compare Model based Agent with Utility based Agent.                   [05]

[D]     What are the problems/frustrations that occur in hill climbing            [05]
technique? Illustrate with an example

[E]     What is supervised learning and unsupervised learning? Give example   [05]
of each.

Q2  [A]   Consider the search problem below with start state S and goal state G. The   [10]
transition costs are next to the edges and the heuristic values are next to the
states. What is the final cost using A * search.
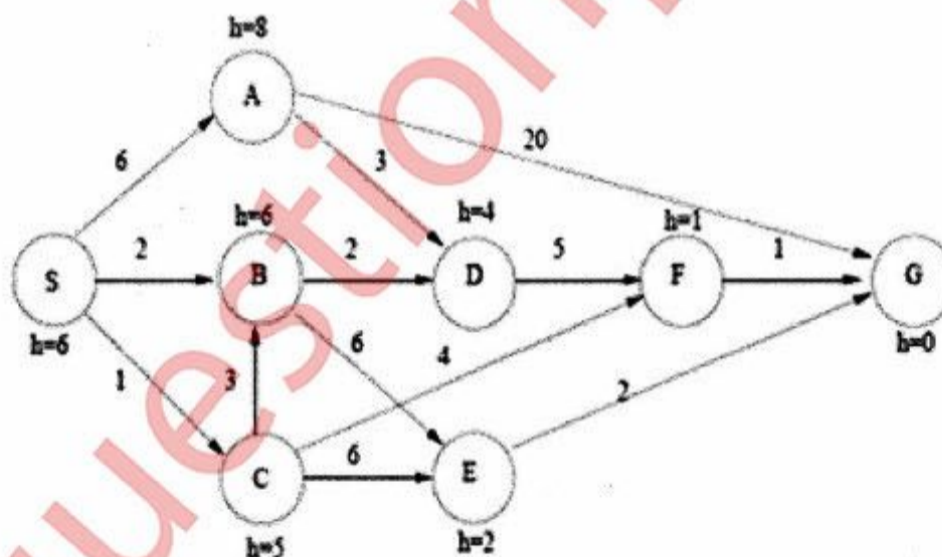


[B]     Explain the architecture of Expert System. What are advantages and      [10]
limitations of Expert System?

Q3  [A]   Explain with example various uninformed search techniques.            [10]
[B]     Illustrate Forward chaining and backward chaining in propositional logic with   [10]
example

**[TURN OVER]**

Q4  [A]  Apply alpha-Beta pruning on following example considering first node as  [10]
         MAX



The leaf values from left to right are:
4 3 5 2 1 4 2 3 5 4 7 3 2 1 4 0 5 3 0 2 7 4 3 6 5 3 1

    [B]  Explain a partial order planner with an example.                      [10]


Q5  [A]  Consider the following facts about dolphins:                          [10]

         Whoever can read is literate. Dolphins are not literate. Some dolphins are
         intelligent.

         (i) Represent the above sentences in first order predicate logic (FOPL).
         (ii) Convert them to clause form
         (iii)Prove that **"Some who are Intelligent cannot read"** using
              resolution technique
    [B]  What is Uncertainty? Explain Bayesian Network with example            [10]


Q6       Write short note on any two of the following:                         [20]

              (i)   Steps in Natural Language Processing

              (ii)  Decision Tree Algorithm with an example

              (iv)  Genetic Algorithms

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