[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

15269

B. Tech 7th Semester Examination

Artificial Intelligence (OS)

CS-7001

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question each from section A, B, C, and D. Section E is compulsory.

SECTION - A

1. Describe seven problem characteristics. Explain them with the help of suitable examples. (20)

2. (a) Write a recursive as well as the iterative version of function in LISP to calculate factorial. (10)

   (b) After evaluating the Lisp expressions (setqlist1 ' (1 2 3)) and (setqlist2 ' (a b c)), what would the value of each of the following Lisp expressions be?

   (i) (cons list1 list2)

   (ii) (cons (car list1) list2)

   (iii) (cons (car list1) (cdr list2))

   (iv) (cons (car (cdr list1)) (cons (car (cdr list2)) NIL)) (10)

SECTION - B

3. Write A* Algorithm. Under what conditions does A* produce the optimal solution? (20)

[P.T.O.]

4. Write AO* algorithm for AND-OR graph. Demonstrate the case when a longer path may be better. (20)

SECTION - C

5. (a) Define the resolution principle in propositional logic as well as in predicate logic with suitable examples. (10)

   (b) Is the Propositional Logic sentence

   $(A \Leftrightarrow B) \wedge (\neg A \vee B)$

   valid, unsatisfiable, or satisfiable? Briefly explain your answer. (10)

6. Define the following in the context of "Knowledge Representation":

   (a) Representational Adequacy.

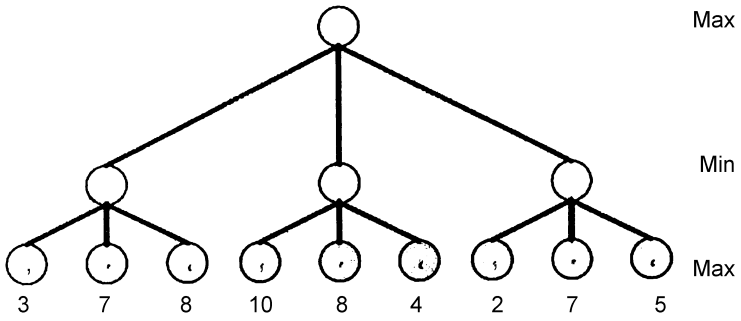
   (b) Inferential Adequacy.

   (c) Inferential Efficiency.

   (c) Acquisitional Efficiency. (20)

SECTION - D

7. Describe the min-max algorithm. For a given game tree, apply alpha-beta pruning. Assume that its MAX turn to play the move. (20)



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8. List the phases in the Expert System development Life Cycle. Discuss the expert system development tools. (20)

SECTION - E

9. Write short note on the following:

   (a) Turing test.

   (b) Means end analysis.

   (c) Backtracking in Prolog.

   (d) Natural deduction.

   (e) Forward and backward searching. (4×5=20)