REFNO064693

Roll No. .....

M.Sc./M.C.A. Semester II Examination 2022-23

Computer Science/Computer Application

CS-208 : Artificial Intelligence

Time : Three hours | Max. Marks : 70

(Write your roll No. at the top immediately on the receipt of this question paper)

Note: Answer any Five questions.

1 a) Explain the Turing's Test for AI. What capabilities are required by an intelligent system to pass 'Turing's test? How John Searle did demonstrate that a machine passing Turing's test need not be intelligent? **2+2+3**

b) Compare the *Symbolic* A.I. and *Connectionist* A.I. approaches. Which of the two approaches is more suitable for Motor and Recognition tasks? List two successes of each. **3+2+2**

2 Consider the following problem:

Tower of Hanoi is a mathematical puzzle where we have three rods and n disks. The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:

i. Only one disk can be moved at a time.

ii. Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack i.e. a disk can only be moved if it is the uppermost disk on a stack.

iii. No disk may be placed on top of a smaller disk

(a) Design a suitable state space representation. **3.5**

(b) Analyze the problem with respect AI characteristics. **10.5**

3 a) Explain A* algorithm with an illustrative example. **8**

b) What is AND-OR graph? Why A* algorithm is not sufficient to search AND-OR graph? **6**

4 a) What is the difference between classification and clustering? Explain the working of k-Nearest Neighbor algorithm **3+4**

b) "Problem solving can be viewed as state space search" Explain the statement in light of problem that A.I. addresses. **7**

5 a) Explain how the problem reduction approach can be used to find the winning strategy for two players' game. **5**

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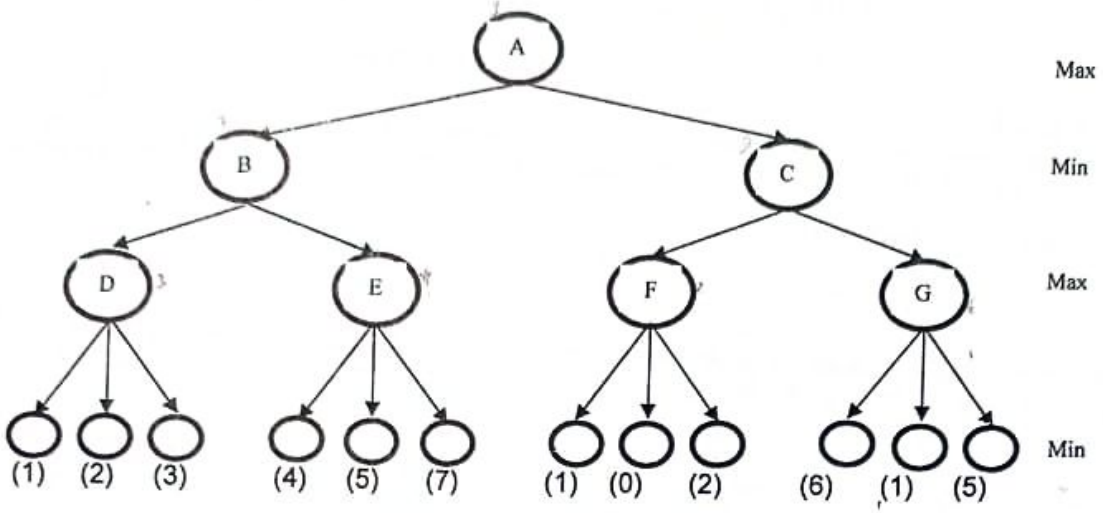
5 b) Explain the Minimax procedure by tracing the game tree given below: 9



6 a) Find whether the following pairs of expressions are unifiable or not, and the most general substitution for each unifiable pair: 6

i. P(x,B,B) and P(A,y,z)

ii. P(g(f(v)),g(u)) and P(x,x)

iii. P(x,f(x)) and P(y,y)

iv. P(y, y, B) and P(z, x, z)

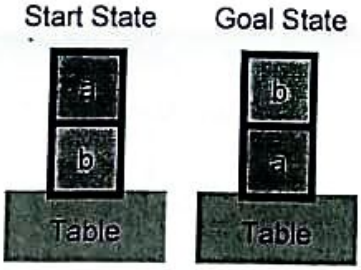
b) Explain the steps involved in converting WFF in to Clause Form. 8

7 a) Explain any one of the following: 7

i. Natural Language processing

ii. Conceptual Dependency and Semantic Net

b) What is operator subgoaling? And explain how the following blocks world planning problem can be solved using the Means Ends Analysis. 7



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