Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Nov – Dec 2017

Max. Marks: 100	Duration: 3Hrs
Class: B.E.	Semester:VII
Course Code: CPC703	Branch:COMP
Name of the Course: Artificial Intelligence	

Instruction:

(1) All questions are compulsary

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q.NO	Question	Marks	CO
Q1 a)	Description of AI:1M Four approaches : 1M each	5M	CO1
b)	Any Five from the following. Each carry one mark. 1) Fully observable vs.Partially observable 2) Single agent vs multi agent 3) Detrministic VS stochastic 4) Episodic VS Sequential 5) Static VS Dynamic 6) Discrete VS Continuous	5M	CO2
c)	Types of quantifier :1marks 1) Universal 2) Existential Description with the help of example: 2marks each	5M	CO3
d)	Define learning from observation :1mark Each component: 1mark 1) Learning elements 2) Performance elements 3) Problem generator 4) critic	5M	CO2
Q2a)	Step by step evaluation to reach from start state to goal state:6mark Finding the heuristic function :4mark OR	10M	CO2

	Following are the methods to represent domain knowledge in expert system. (Minimum eight required. Each Carry One Marks with Description) 1)Production Rule 2) Decision Tree 3) Semantic Nets 4) Factor tables 5) Attribute Value Pairs 6)Reasoning 7)Frames 8)Scripts 9)Logic 10)Conceptual Graphs		
Q2b)	Rules in prolog : 2marks Each query in prolog : 3marks	5M	CO2
c) Ans:	initial state: 1mark Goal state: 1mark Successor function:2 marks Sequence of Rule: 1marks	5M	CO3
Q3a)	Architecture diagram-4marks Explanation of each block-6marks OR Step 1: converting given statement to FOL.-5marks Step 2:Converting FOL to CNF-2makrs Step 3:Negate the statement to be proved-1marks Step 4 :Proof -2marks	10M	CO2
b)	i) Steps to build belief network.(4marks) 1) Identification of nodes and values. 2)Casual relationship among variable(structure) 3)Conditional probabilities 4) Identification of required Assumptions. ii) Solution of given problem.(6marks) $P(D\|A) = P(A, D) / P(A)$ $= (P(A, B, C, D) + P(A, B, \neg C, D) + P(A, \neg B, C, D) + P(A, \neg B, \neg C,D)) / P(A)$ $= P(B \|A) P(C \| A) P(D \| B, C) + P(B \| A) P(\neg C\|A) \quad P(D \| B, \neg C) + P(\neg B \| A) P(C \| A)$	10M	CO2

	$P(D \mid \neg B, C) + P(\neg B \mid A) P(\neg C \mid A) P(D \mid \neg B, \neg C)$ $= (0.2 \times 0.7 \times 0.3) + (0.2 \times 0.3 \times 0.25) + (0.8 \times 0.7 \times 0.1) + (0.8 \times 0.3 \times 0.35)$ $= 0.042 + 0.015 + 0.056 + 0.084$ $= 0.197$			
Q4a)	Construction of Decision tree: 6marks Two rule:4marks OR Description of Conditional planning:2marks Problem Formulation:4marks Graphical Representation of solution: 4marks	10M	CO3
b)	Specification of alpha and beta condition:2marks Left sub tree:3marks Right sub tree:3marks Advantages :2marks OR Step by step representation of greedy search from start to goal: 4marks Step by step representation of A* search from start to goal: 4marks Function cost: 2marks	10M	CO2
Q5a)	Following are the techniques used in Natural language Processing.(description of each carry 2marks) 1) Pattern Matching 2) Syntactically driven parsing 3) Semantic Grammars 4) Case Frame Instantiation	8M	CO4
b)	Forward chaining tree -4marks Explanation of flow of tree-2marks Backward chaining tree -4marks Explanation of flow of tree-2marks	12M	CO2