

## University of Mumbai

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: Computer Engineering

Curriculum Scheme: Rev-2016

Examination: BE Semester VII

Course Code: CSC703 and Course Name: Artificial Intelligence & Soft Computing

Time: 2 hour

Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which search method takes less memory?
Option A:	Depth-First Search
Option B:	Breadth-First search
Option C:	Optimal search
Option D:	Linear Search
2.	Which rule is applied for the Simple reflex agent?
Option A:	Simple-action rule
Option B:	Simple &Condition-action rule
Option C:	Condition-action rule
Option D:	Goal-action rule
3.	Which of the given language is not commonly used for AI?
Option A:	LISP
Option B:	PROLOG
Option C:	Python
Option D:	Perl
4.	The exploration problem is where_____.
Option A:	Agent contains the knowledge of State.
Option B:	Agent does not contain the knowledge of State and actions.
Option C:	Only actions are known to the agent.
Option D:	Agent contains the knowledge of State and actions
5.	In the Wumpus World Problem, the reason for the uncertainty is that the agent's sensor gives only__
Option A:	Full & Global information
Option B:	Partial & Global Information
Option C:	Full & local information
Option D:	Partial & local Information
6.	Which of the following option is used to build complex sentences in knowledge representation?
Option A:	Quantifier
Option B:	Symbols
Option C:	Connectives
Option D:	Constants

7.	Inference algorithm is complete only if
Option A:	It can derive any sentence
Option B:	It can derive any sentence that is an entailed version
Option C:	It is truth preserving
Option D:	It can derive any sentence that is an entailed version & It is truth preserving
8.	The process by which the brain incrementally orders actions needed to complete a specific task is referred as _____
Option A:	Partial order planning
Option B:	Total order planning
Option C:	Planning problem
Option D:	Conditional Planning
9.	What are you predicating by the logic: $\forall x: \exists y: \text{loyalto}(x, y)$ .
Option A:	Everyone is loyal to someone
Option B:	Everyone is loyal to all
Option C:	Everyone is not loyal to someone
Option D:	Everyone is loyal
10.	Which of the following search belongs to totally ordered plan search?
Option A:	Forward state-space search
Option B:	Hill-climbing search
Option C:	Depth-first search
Option D:	Breadth-first search
11.	How fuzzy logic different from conventional control method ?
Option A:	IF and THEN Approach
Option B:	FOR Approach
Option C:	WHILE Approach
Option D:	DO Approach
12.	The truth values of traditional set theory is and that of fuzzy set is
Option A:	Between 0 & 1, either 0 or 1
Option B:	Either 0 or 1, either 0 or 1
Option C:	Between 0 & 1, between 0 & 1
Option D:	Either 0 or 1, between 0 & 1
13.	The room temperature is hot. Here the hot (use of linguistic variable is useD. can be represented by
Option A:	Fuzzy Set
Option B:	Crisp Set
Option C:	Fuzzy & Crisp Set
Option D:	Traditional Set
14.	Neural Networks are complex _____ with many parameters.
Option A:	Linear Functions
Option B:	Nonlinear Functions
Option C:	Discrete Functions
Option D:	Discrete Functions

15.	In Feedforward ANN, information flow is _____.
Option A:	multidirectional
Option B:	bidirectional
Option C:	unidirectional
Option D:	Backward direction
16.	A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 3, 2 and 1 respectively. What will be the output?
Option A:	30
Option B:	40
Option C:	50
Option D:	60
17.	A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. What will be the output?
Option A:	119
Option B:	123
Option C:	76
Option D:	238
18.	Which of the following is not a benefit of Expert Systems?
Option A:	Availability
Option B:	Speed
Option C:	Time
Option D:	Less Error Rate
19.	In which of the following learning the teacher returns reward and punishment to learner?
Option A:	Active learning
Option B:	Supervised learning
Option C:	Unsupervised learning
Option D:	Reinforcement learning
20.	What is back propagation?
Option A:	It is another name given to the curvy function in the perceptron.
Option B:	It is the transmission of error back through the network to adjust the inputs.
Option C:	It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.
Option D:	It is the transmission of error from input layer to output layer.

<b>Q2</b>	<b>Solve any Two Questions out of Three</b> <b>10 marks each</b>
A	Consider the graph given below in figure. Assume that the initial state is A and goal state is G. Find a path from initial state to goal state using DFS. Also find the path cost.

	<pre> graph LR   A((A)) --&gt; B((B))   A((A)) --&gt; C((C))   B((B)) --&gt; E((E))   B((B)) --&gt; D((D))   C((C)) --&gt; D((D))   C((C)) --&gt; G((G))   D((D)) --&gt; F((F))   D((D)) --&gt; H((H))   F((F)) --&gt; H((H))   style G fill:#ccc   </pre>
B	Design a planning agent for a Blocks World problem. Assume suitable initial state and final state for the problem.
C	Illustrate forward chaining and backward chaining in predicate logic with suitable example?
<b>Q.3.</b>	<b>Solve any Two Questions out of Three                      10 marks each</b>
A	Explain fuzzy controller system for a tipping example. Consider service and food quality rated between 0 and 10. Use this to leave a tip of 25%.
B	Design a Mc-Culloch Pitts model for XOR Gate.
C	Discuss various stages in the development of expert system?