Program: **Information Technology**
Curriculum Scheme: Rev2016
Examination: BE Semester VII
Course Code: ITC703 and Course Name: Artificial Intelligence
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** **02** **marks X 10 = 20 marks**
1.	Consider an example of ALEXA, what kind of environment it required to perform well.
Option A:	Fully Observable, Deterministic, Episodic, Dynamic, Discrete
Option B:	Partially Observable, Stochastic, Episodic, Dynamic, Discrete
Option C:	Partially Observable, Stochastic, Sequential, Dynamic, Continuous
Option D:	Partially Observable, Stochastic, Sequential, Dynamic, Discrete
2.	For a Simulated annealing algorithm, for a very high value of T, the algorithm behaves like ---- and as T becomes 0, the behavior move towards ----
Option A:	Random Walk, Hill Climbing
Option B:	Hill Climbing, Random Walk
Option C:	DFS, Random Walk
Option D:	Tabu Search, Random Walk
3.	Which statement is true: I- A* is complete and admissible II- A* search algorithm's time complexity is more than DFS III- A* search algorithm's time and space complexity depends on heuristic function
Option A:	I and II
Option B:	II and III
Option C:	I and III
Option D:	Only I
4.	Every rat has a tail, can be represented as
Option A:	$\exists$ x has (x, tail)
Option B:	$\forall$ x has (x, tail)
Option C:	$\exists$ x rat(x) $\rightarrow$ has (x, tail)
Option D:	$\forall$ x rat(x) $\rightarrow$ has (x, tail)
5.	The symbolization of a bidirectional implication is
Option A:	p $\rightarrow$ q
Option B:	p & q
Option C:	p v q
Option D:	p $\leftrightarrow$ q

6.	For Air cargo transport problem, the precondition for Unload(x,y, Mumbai) is
Option A:	Load(x,y, Mumbai) and Fly(y, Mumbai, Mumbai)
Option B:	Load(x,y, Pune) and Fly(y, Pune, Mumbai)
Option C:	Load(y,x, Pune) and Fly(z, Pune, Mumbai)
Option D:	Load(y,x, Mumbai) and Fly(z, Mumbai, Mumbai)
7.	Plan for making lunch which includes Roti, Dal and Rice is
Option A:	Only Total order
Option B:	Only Partial order
Option C:	Combination of all types
Option D:	Only conditional
8.	BELIEF NETWORK represents
Option A:	Relation between outcomes
Option B:	the dependence between variables
Option C:	the dependence between outcomes
Option D:	Collection of outcomes
9.	Which of the following is an application of NLP
Option A:	Document clustering
Option B:	Map coloring
Option C:	OLTP Transaction
Option D:	Resource allocation
10.	Which of the following concepts make a system cognitive?
Option A:	Random learning
Option B:	Continuous learning from data across time
Option C:	Data cleaning
Option D:	Data extraction

Q2.	**Solve any Two Questions out of Three** **10 marks each**
A	What do you mean by Uninformed, Informed and Local Search Algorithms? Discuss the OPEN and CLOSED List as the algorithm DFS and BFS progresses.
B	1. Convert the following to predicates: 6 marks a. Bina makes tea if she has honey otherwise makes coffee. b. Coffee is a bitter drink. c. Bina has honey. 2. Will Bina make a bitter drink? Use backward reasoning. 4 marks
C	Explain different components of Natural Language processing? Also, explain different levels of knowledge used in language understanding?

Q3.	Solve any Two Questions out of Three 10 marks each
A	What is the Constraint Satisfaction Problem? What would be the constraints for the cryptarithmetic problem described in the figure below. Solve it. F O V E + X E V E N + F O V E M A O K U
B	Plan and explain spare tire changing.
C	Explain Best First Search algorithm with suitable examples.

Q4.	Solve any Two Questions out of Three 10 marks each
A	What is AI? Considering the COVID-19 pandemic situation, how AI helped to survive and renovated our way of life with different applications?
B	Demonstrate Bayes Theorem using Conditional Probability? Out of 5000 patients how many with stiff necks are suffering with meningitis if the following facts are known: 1. Meningitis causes patients to have stiff neck 50% of the time. 2. Probability of a person having meningitis is 1/50000. 3. Every 1 out of 20 patients has a stiff neck.
C	If you know the strategy of the opponent player, you can estimate all his/her moves correctly. Is the above statement True or False in the context of a game of Chess? Justify your answer.