Course: B. Tech.   **Branch : Computer Science & Engineering**   **Semester : VI**

Subject Code & Name: BTCOE603 Elective V: (B) Artificial Intelligence

Max Marks: 60   **Date:**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Explain Learning Agent in detail with help of appropriate diagram	2	**6**
B)	Write Short note on: 1. Agent 2. Fully Observable vs Partially Observable Environment 3. Static vs Dynamic Environment	2	**6**
C)	Give PEAS description of following task environment 1. Automated Taxi 2. Part Picking Robot 3. Medical diagnosis system	3	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Elaborate five components that define problem with example	2	**6**
B)	Explain Breadth First Search Algorithm and Depth First Search Algorithm with help of example	2	**6**
C)	Draw search tree for finding route from your home to your college and elaborate following terms regarding tree 1. Initial State 2. Goal State/ Test 3. Frontier 4. Branching factor of Initial node	3	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Elaborate various Local Consistencies in detail	2	**6**
B)	Explain following terms in details: 1. Unary Constraint 2. Binary Constraint 3.Higher order constraint	2	**6**
C)	Consider the problem of scheduling the assembly of car consisting of following 15 tasks: - Install axles (front and back) - Affix all four wheels (right and left, front and back) - Tighten nuts for each wheel - Affix hubcaps, and inspect the final assembly **Only one tool for nut fitting is available**. Elaborate how Precedence Constraint and Disjunctive Constraint will be used to solve this problem.	3	**6**

Q.4 **Solve Any Two of the following.** 12

A) Explain what is MINIMAX value and MINIMAX algorithm   2   **6**

B) Elaborate knowledge based agent in detail   2   **6**

C) Explain any one application of Artificial Intelligence in detail   3   **6**

Q. 5 **Solve Any Two of the following.** 12

A) Explain Bayesian network in details   2   **6**

B) Enlist and explain connectives and elaborate how connectives can be used to form complex sentences   2   **6**

C) If patient is having cold and fever then there are 70% chances that patient will have headache. The prior probability that patient has cold and fever is 1/50,000 and the prior probability that patient has headache is 3%. If patient is having headache, what is the probability that patient will experience cold and fever?   3   **6**

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