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**Reg.No**

**Sona College of Technology (Autonomous), Salem -5.**

**SET - 1 Department of Computer Science and Engineering**

**Continuous Internal Evaluation Test – II**

**U15CS702 – Artificial Intelligence**

**Common to All sections (IV Year / VII Semester)**

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| **Date :** | | | **21.9.21** | |  | **Marks : 50** | | **Levels of**  **B.T** | **Course Outcomes** |
| **Time slot :** | | | **09.15 To 10.45 am** | | **Duration : 1 ½ hours** | |
| **PART – A Answer All Questions (6 x 2 = 12 Marks)** | | | | | | | |  |  |
| 1. | Compare different uninformed search strategies in terms of the four evaluation criteria. | | | | | | | LOTS | 2 |
| 2. | Define admissible and consistent heuristics? | | | | | | | HOTS | 2 |
| 3. | List some of the rules of inference. | | | | | | | LOTS | 3 |
| 4. | What are the limitations in using propositional logic to represent the knowledge base? | | | | | | | LOTS | 3 |
| 5. | What are the elements of propositional logic? | | | | | | | HOTS | 3 |
| 6. | Represent the following sentence in predicate form:  “All the children like sweets” | | | | | | | HOTS | 3 |
| **PART – B Answer All Questions (2 x 5 = 10 Marks)** | | | | | | | |  |  |
| 7. | Write short notes on A\* search strategy. | | | | | | | LOTS | 2 |
| 8. | Considered the following facts:  P = It is sunny this afternoon  Q = it is colder than yesterday  R = We will go swimming  S= we will take a canoe trip  T= We will be home by sunset  Convert the given sentence into Propositional logic sentences:   1. It is not sunny this afternoon and it is colder than yesterday. 2. We will go swimming only if it is sunny. 3. If we do not go swimming then we will take a canoe trip. 4. If we take a canoe trip, then we will be home by sunset. | | | | | | | HOTS | 3 |
| **PART – C Answer All** **Questions (2 x 14 = 28 Marks)** | | | | | | | |  |  |
| 9. | (a) | (i) | | Consider the following graph given below. The numbers written on edges represent the distance between the nodes. The numbers written on nodes represent the heuristic value. Find the most cost-effective path to reach from start state S to final state G using A\* Algorithm. | | | 7 | HOTS | 2 |
|  |  | (ii) | | Write short notes on any two local search strategies with example. | | | 7 | LOTS | 2 |
|  |  |  | | **(OR)** | | |  |  |  |
|  | (b) | (i) | | Give the values calculated by minimax for all states in the tree. Do not use alpha-beta Pruning if needed and indicate which branches of the tree will be pruned by alpha-beta pruning | | | 7 | HOTS | 2 |
|  |  | (ii) | | Define constraint satisfaction problem (CSP). How CSP is formulated as a search problem? Explain with an example. | | | 7 | LOTS | 2 |
|  | | | | | | |  |  |  |
| 10. | (a) | (i) | | Use truth tables to Show that (p → q) ∧ (q → p) is logically equivalent to p ↔ q  Use truth tables to Show ¬(p → q) is equivalent to p ∧ ¬q. | | | 7 | HOTS | 3 |
|  |  | (ii) | | Explain the forward chaining process in detail with example? | | | 7 | LOTS | 3 |
|  |  |  | | **(OR)** | | |  |  |  |
|  | (b) | (i) | | Look at the following sentences and decide for each if it is valid, unsatisfiable , or neither. Verify using the equivalence rules  a. Smoke => Smoke  b. Smoke => Fire  c. (Smoke => Fire} => ( ̚ Smoke => ̚ Fire)  d. Smoke V Fire V ̚ Fire | | | 7 | HOTS | 3 |
|  |  | (ii) | | Write short notes on unification algorithm used for reasoning under predicate logic with an example? | | | 7 | LOTS | 3 |
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| **Bloom’s** | **LOTS** | **HOTS** | **Total** |
| **Percentage** | 50 | 50 | 100 |