**20EI701/PE**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **December, 2023** | **Electronics and Instrumentation Engineering** | | |
| **Seventh Semester** | **Artificial Intelligence** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | Define State space | CO1 | L1 | 1M |
|  | b) | Mention the advantages of AND-OR graph representation to solve a problem. | CO1 | L1 | 1M |
|  | c) | Write the major milestones in the historical developments of AI. | CO1 | L1 | 1M |
|  | d) | Define the heuristic function. | CO1 | L1 | 1M |
|  | e) | What are the problem performance measures in AI. | CO2 | L1 | 1M |
|  | f) | What are different problems in AI. | CO2 | L1 | 1M |
|  | g) | What are the parameters used in the evaluation of search algorithms in AI. | CO2 | L1 | 1M |
|  | h) | What is a sematic network | CO2 | L1 | 1M |
|  | i) | Define a frame. | CO3 | L1 | 1M |
|  | j) | Differentiate between proposition logic & predicate logic. | CO3 | L1 | 1M |
|  | k) | Draw the hierarchy structure of the Meta- Knowledge | CO3 | L1 | 1M |
|  | l) | What is the role of AI in health care system. | CO4 | L1 | 1M |
|  | m) | Differentiate between forward and backward reasoning. | CO4 | L1 | 1M |
|  | n) | State conclude remarks on AI - present and future | CO4 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | There are two jugs of volume A liter and B liter. Neither has any measuring mark on it. There is a pump that can be used to fill the jugs with water. How can you get exactly x liter of water into the A liter jug. Assuming that we have unlimited supply of water. Note: a) Let's assume we have A=4 liter and B= 3 liter jugs. And we want exactly 2 Liter water into jug A (i.e 4 liter jug) how we will do this. b) Let's assume we have A=5 liter and B= 2 liter jugs. And we want exactly 1 liter water into jug A (i.e 5 liter jug) how we will do this explain with problem formulation and problem representation. | CO1 | L2 | 7M |
|  | b) | Explain about problem solving process using AI with neat block diagram. Also explain problem types and problem analysis | CO1 | L2 | 7M |
| **(OR)** | | | | | |
| 3 | a) | Differentiate structured and ill structured problems with an example. | CO1 | L3 | 7M |
|  | b) | Define the following problems. What types of control strategy is used in the problems and explain. i) The Tower of Hanoi ii) Tic tac toe problem iii) Route finding | CO1 | L3 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Differentiate inform and uninform search with relative examples. | CO2 | L4 | 7M |
|  | b) | What is the importance of A\* algorithm and also explain about how to make A\* admissible. Find the shortest path from S to G. | CO2 | L2 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Explain the following briefly with an example  i) Hill climbing Algorithms (ii) Best First Search | CO2 | L2 | 7M |
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|  | b) | Write about AO\* search algorithm and explain with an example. | CO2 | L2 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | What are the different representations of the knowledge base? Discuss approaches and issues of Knowledge Representation | CO3 | L2 | 7M |
|  | b) | Briefly explain Knowledge Representation techniques used in AI | CO3 | L2 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Explain knowledge representation using semantic network. | CO3 | L2 | 7M |
|  | b) | What is an intelligent agent? Classify basic types of agents and explain. | CO3 | L2 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Draw the architecture of the expert system and explain | CO4 | L2 | 7M |
|  | b) | Explain phases in Building Expert Systems | CO4 | L2 | 7M |
| **(OR)** | | | | | |
| 9 | a) | List the range of applications in AI and explain in detail about any four with an example. | CO4 | L2 | 7M |
|  | b) | Discuss the following case studies  i) Agriculture domain – parameters for crop selection and its intelligent system  ii) Automatic Car Parking System – parameters and its intelligent system | CO4 | L2 | 7M |

