**Code No.1PC406AD**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**B.E. (AI & DS) IV-Semester (AICTE) Regular Examination, AUGUST-2023**

**Subject: FOUNDATIONS OF ARTIFICAL INTELLIGENCE**

**Time: 3 hours Max.Marks:60**

**Note: Missing data, if any, maybe suitably assumed.**

**PART-A**

**Answer All the questions.(10X2M=20M)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q.No.** | **Questions** | **Marks** | **CO** | **BTL** |
| 1. a | Distinguish Artificial Intelligence and Natural Intelligence | 2 | CO1 | IV |
| b | What is alpha beta pruning? | 2 | CO1 | I |
| c | What is rule based knowledge representation? | 2 | CO2 | I |
| d | Illustrate procedural knowledge with example | 2 | CO2 | II |
| e | What is default logic? | 2 | CO3 | I |
| f | Summarize about de-fuzzification. | 2 | CO3 | II |
| g | Define intelligent agents. | 2 | CO4 | I |
| h | Outline the characteristics of hierarchical planning. | 2 | CO4 | II |
| i | Define Expert systems. | 2 | CO5 | I |
| j. | List the components of expert system architecture. | 2 | CO5 | I |

**P.T.O**

**Code No.1PC406AD**

**PART-B**

**Answer Any Five questions**.**(5X8M=40M)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Compare A\* and AO\* search algorithms with suitable examples | **4** | **CO1** | **IV** |
| **b** | Identify and explain the sequence of nodes that will be visited using breadth-first and depth-first search by considering the below data structure.  A  / | \  B C D  / \ /  E F G  / \  H I | **4** | **CO1** | **V** |
| **3.** | **a** | Apply forward reasoning and find if the “**grass is wet or not**” using the following facts   1. If it is raining, then the ground is wet 2. If the ground is wet, then the grass is wet | **4** | **CO2** | **III** |
| **b** | Explain Conflict resolution in Artificial Intelligence | **4** | **CO2** | **V** |
| **4.** | **a** | Illustrate Dempster Shafer Theory with example | **4** | **CO3** | **II** |
| **b** | Machines A and B produce 10% and 90% respectively of the production of a component intended for the motor industry. From experience, it is known that the probability that machine A produces a defective component is 0.01 while the probability that machine B produces a defective component is 0.05. If a component is selected at random from a day’s production and is found to be defective, find the probability that it was made by (a) machine A; (b) machine B. | 4 | **CO3** | **III** |
| **5.** | **a** | Analyze different planning approaches. | **4** | **CO4** | **IV** |
| **b** | Explain Multi-agent Planning process with example | **4** | **CO4** | **V** |
| **6.** | **a** | Differentiate expert Systems and traditional Systems | **4** | **CO5** | **IV** |
| **b** | Briefly discuss about expert systems architecture | **4** | **CO5** | **VI** |
| **7.** | **a** | Identify the pruned nodes using alpha beta pruning  MAX  / | \  MIN MIN MIN  / \ / \ / \  3 5 2 9 6 8 | **4** | **CO1** | **III** |
| **b** | Elaborate on different approaches of knowledge representations. | **4** | **CO2** | **VI** |
| **8.** | **a** | Explain the architecture of fuzzy logic system. | **4** | **CO3** | **V** |
| **b** | Explain how conditional planning agents handle uncertainty in dynamic environments.Give suitable example. | **4** | **CO4** | **V** |
| **9.** | **a** | Discuss about decision tree based expert system with suitable example. | **4** | **CO5** | **VI** |
| **b** | Illustrate A\* algorithm with suitable example | **4** | **CO1** | **II** |

**\*\*\*\*\*\***