**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, December 2022**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1BC1005** | Roll No. | Total Printed Pages: 2 |
| **1BC1005** |  |
| BCA I Year I-Semester (Main/Back) End Semester Examination, December 2022  **(AIDS)** | |
| **BASCCA1105 : Fundamentals of Artificial Intelligence** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | If an Agent wants to use goal as base for problem solving, then what are the basic for goal-based agent and how it’s different from Utility Based Agent? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | What do you understand by Artificial Intelligence and how human civilizations get affected by AI in different era? | **(6)** | Knowledge |
|  |  | **OR** |  |  |
| **Q.2** | **(a)** | For building an AI based machines, what are the views that machine should be have, Explain all views in briefly? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | Write down short note on below topics-  a) Simple reflex agents b) Model-based reflex agents | **(6)** | Knowledge |
|  |  | **UNIT-II (CO2)** |  |  |
| **Q.3** | **(a)** | Why do we use problem solving domain in AI and what are the basic components required for solving any problem in AI? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | Calculate shortest path from S to G using A\* Algorithm with proper explanation? | **(6)** | Application |
|  |  | **OR** |  |  |
| **Q.4** | **(a)** | How did genetic algorithm will help to get new manipulative data from huge population data set, explain working of genetic algorithm? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | Apply the BFS and DFS algorithms to the graph below; determine the graph's space and time complexity, path, then compare the both algorithms using a tabular format? | **(6)** | Application |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | What do you understand by Graph colouring problem and solve this problem using CSP if Variables (A,B,C,D), Domain (Red,Yellow,Blue) and Constraints (A≠B,A≠C,A≠D,B≠D,C≠D)? | **(6)** | Application |
|  |  |  |  |  |
|  | **(b)** | If a person wants to MAP colouring in which no neighbouring states will be having same colour, between state space search and Constraint specification problem which one he will choose and how it will be best from another one? | **(6)** | Knowledge |
|  |  | **OR** |  |  |
| **Q.6** | **(a)** | If a person having 4\*4 matrix and want to fill it with 4 Queens Q1,Q2,Q3,Q4 with some constraints which are (One queen in one row & column and on their diagonal position), How do he can solve this CSP problem mention proper explanation? | **(6)** | Application |
|  |  |  |  |  |
|  | **(b)** | Write down short note on below topics: -  1) Constraint Satisfaction Problem 2) Constraint Propagation | **(6)** | Knowledge |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** | **(a)** | Why do we use the minmax algorithm instead of breadth-first search when playing games, apply minmax in the graph below?  Diagram  Description automatically generated | **(6)** | Application |
|  |  |  |  |  |
|  | **(b)** | What are you understand by game playing and mention their component and use in AI? | **(6)** | Knowledge |
|  |  | **OR** |  |  |
| **Q.8** | **(a)** | Describe the α-β pruning algorithm and apply it to the graph below? | **(6)** | Application |
|  |  |  |  |  |
|  | **(b)** | Write short note on below topics-  a) α-β pruning algorithm b) Min-Max Algorithm | **(6)** | Knowledge |
|  |  | **UNIT V (CO5)** |  |  |
| **Q.9** | **(a)** | What are the applications and limitations of Natural Language Processing in AI? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | For making NLP Base, what are the techniques used for making NLP Base? | **(6)** | Knowledge |
|  |  | **OR** |  |  |
| **Q.10** | **(a)** | Expert system is new born AI for upcoming decades; briefly explain expert system on given statement? | **(6)** | Knowledge |
|  |  |  |  |  |
|  | **(b)** | How did an Artificial intelligence work with Robotics and how it differs with the robotics? | **(6)** | Knowledge |