**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, December 2022**

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|  | **1BT1010** | Roll No. | Total Printed Pages: 2 |
| **1BT1010** |  |
| B. Tech. I Year I-Semester (Main/Back) End Semester Examination, December 2022  **(AIDS)** | |
| **BADCCE1107 : Introduction to 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-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | What is AI definition of AI in terms of thinking humanly thinking rationally Acting humanly acting rationally? | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | What is the full form of PEAS? Describe PEAS for a self-driving car? | **(6)** | **Analyzing** |
|  |  | **OR** |  |  |
| **Q.2** | **(a)** | What is the difference between simple reflex agent and goal based agent? | **(6)** | **Analyzing** |
|  |  |  |  |  |
|  | **(b)** | How do AI agents interact with the environment? What are different types of environment in AI? | **(6)** | **Understanding** |
|  |  | **UNIT-II (CO2)** |  |  |
| **Q.3** | **(a)** | What is problem-solving agent in Artificial Intelligence? What are the steps of problem-solving in AI? | **(6)** | **Applying** |
|  |  |  |  |  |
|  | **(b)** | Consider the graph given in the figure below. Assume that the initial state is S and Goal state is G. Find a path from initial state to the goal state using BEST FIRST search. Also report the path cost. The straight line distance heuristic estimates for the nodes are as follows:- | **(6)** | **Creating** |
|  |  | **OR** |  |  |
| **Q.4** | **(a)** | What is difference between informed and uninformed search? Explain one search of each. | **(6)** | **Analyzing** |
|  |  |  |  |  |
|  | **(b)** | Consider the graph given in the figure below. Assume that the initial state is S and Goal state is G. Find a path from initial state to the goal state using A\* search algorithm. Also report the path cost. The straight line distance heuristic estimates for the nodes are as follows:- | **(6)** | **Creating** |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | Discuss the different types of domain and constraint types in CSP | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **(b)** | Describe with help of a flowchart the working of Hill climbing algorithm? Also discuss the features of the same. | **(6)** | **Analyzing** |
|  |  | **OR** |  |  |
| **Q.6** |  | Discuss Constraint Satisfaction problem with the help of example given below.  Also Apply forward checking method of CSP to colour the following graph with any of the three colour – R,G B. No adjacent places should get the same colour. | **(12)** | **Creating** |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** | **(a)** | Differentiate between Search and games in tabular form | **(4)** | **Analyzing** |
|  |  |  |  |  |
|  | **(b)** | In the following two-ply game tree, the terminal nodes show the utility values computed by the utility function. Compute the utility values for other nodes in the given game tree and the path that will give maximum benefit to the MAX player using both the adversarial search methods. | **(8)** | **Creating** |
|  |  | **OR** |  |  |
| **Q.8** | **(a)** | Write a short note on Zero sum game in AI. | **(4)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | In the following two-ply game tree, the terminal nodes show the utility values computed by the utility function. Compute the utility values for other nodes in the given game tree and the path that will give maximum benefit to the MAX player using both the adversarial search methods. | **(8)** | **Creating** |
|  |  | **UNITV (CO5)** |  |  |
| **Q.9** | **(a)** | What is the difference between information retrieval and information extraction in AI? | **(6)** | **Analyzing** |
|  |  |  |  |  |
|  | **(b)** | We are given the following corpus:  <s> I am Sam </s>  <s> Sam I am </s>  <s> I am Sam </s>  <s> I do not like green eggs and Sam </s>  Using a bigram language model, Explain all the probability or possibility chance for am\_? what is P(Sam | am)? what is p(</s> I sam)? Include <s> and </s> in your counts just like any other token. | **(6)** | **Creating** |
|  |  | **OR** |  |  |
| **Q.10** | **(a)** | Explain the use of NLP in machine translation and speech recognition? | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | We are given the following corpus:  <s> The girl bought a chocolate </s>  <s> The boy ate the chocolate </s>  <s> The girl bought a toy </s>  <s> The girl played with the toy </s>  Using a trigram language model, Explain all the probability or possibility chance for The girl\_? what is P(chocolate | bought a)? what is p(</s> I chocolate) ,using bigram language model? Include <s> and </s> in your counts just like any other token. | **(6)** | **Creating** |