UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
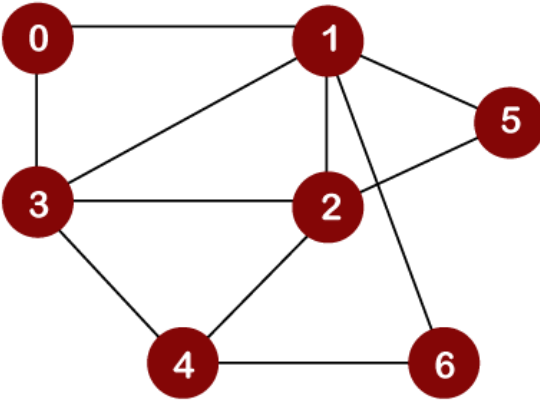**End Semester Examination, December 2022**

Course: Introduction to Artificial Intelligence
Semester: III
Program: BCA AI and ML   Time: 03 hrs.
Course Code: CSAI 2010   Max. Marks: 100

Instructions: Attempt all questions.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Using a suitable example, explain the water jug problem in AI.	4	CO1
Q.2	Explain the following problem with respect to its seven characteristics: (a): chess (b): 8 puzzles	4	CO2
Q.3	Consider the sentence "The old man's glasses were filled with sherry". What information is necessary to choose the correct meaning of the word "glasses"? What information suggest the incorrect meaning?	4	CO2
Q.4	Why use Artificial Neural Networks? What are its advantages?	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 1	Illustrate expert system and explain its key components.	10	CO3
Q.2	Illustrate knowledge representation? Explain the types of knowledge?	10	CO2

Q.3	Suppose 0 is root node, write down breadth first traversal and depth first traversal for above graph.	10	CO2
Q.4	Consider trying to solve the 8-puzzle using hill climbing. Can you find a heuristic function that make this work on the following

1	2	3
8	5	6
4	7	

   (a) Start

1	2	3
4	5	6
7	8	

   (b) Goal

<div align="center">OR</div>

Explain depth first search (DFS) and breadth first search (BFS) with a suitable
example. When would BFS be worse than DFS? | | CO2 |
| | **SECTION-C**
(2Qx20M=40 Marks) | | |
| Q 1 | Explain the following stages of natural language processing with a suitable example:

(a) Syntactic processing
(b) Semantic processing
(c) Discourse Processing | 20 | CO3 |

	(d) Pragmatic processing		
Q.2	Consider the following set of facts: • John likes all kinds of foods. • Apples are food. • Chicken is food. • Anything anyone eats and isn't killed by is food. • Bill eats peanuts is still alive. • Sue eats everything Bill eats. (a) Translate these sentences into formula in predicate logic. (b) Prove that John likes peanuts using backward chaining. OR Explain the following with an example: (a): Hill climbing technique (b): Generate and test technique	**20**	**CO4**