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PAPER CODE	U315-274A(ESE)

(AY:2025-26) December 2025 (ENDSEM) EXAM

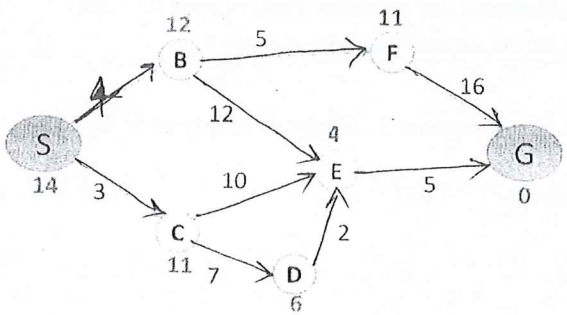
TY (SEMESTER - I)

COURSE NAME: ARTIFICIAL INTELLIGENCE **Branch: CSE-IoTCSBT** **COURSE CODE: CI31234A**

Time : [1Hr 30 Min] **(T.Y (Pattern 2023))** [MAX MARKS: 40]

Instructions to candidates:

1) **Figures to the right indicate full marks. Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory. Solve any two sub question each from Questions 1 and 2**
4) **Solve any one sub question (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Demonstrate with an example how an intelligent agent works in an online shopping environment.	[4]	[1]	[3]
	b) Compare human intelligence and machine intelligence with suitable examples in decision-making.	[4]	[1]	[2]
	c) Explain how informed search improves performance over uninformed search with an example.	[4]	[1]	[2]
Q2	a) Compare Depth First Search (DFS) and Uniform Cost Search (UCS) with an example each.	[4]	[2]	[2]
	b) Illustrate the difference between Hill Climbing and Tabu Search in AI optimization with an example of route optimization.	[4]	[2]	[3]
	c) Solve the example using A* algorithm where Source is S and Goal node is G. 	[4]	[2]	[3]

Q3	a) Create first-order logic statements to represent the following family relationships: "Alice is the mother of Bob," "Bob is the brother of Carol," and "Carol is the daughter of Alice."	[2]	[3]	[3]
	OR			
	b) Demonstrate with an example how a rule-based expert system can infer loan eligibility.	[2]	[3]	[3]
	c) Construct a semantic network to represent: "A canary is a bird. Birds can fly and have wings. A canary is yellow and sings. Penguins are also birds but cannot fly."	[4]	[3]	[3]
Q4	a) Compare Linear planning and non-linear planning.	[2]	[4]	[2]
	OR			
	b) Define goal stack planning and explain how it organizes the problem-solving process. Provide an example of a problem that could be solved using goal stack planning.	[2]	[4]	[2]
	c) Construct an MDP for adaptive traffic control, specifying how rewards can be designed to minimize congestion and waiting time.	[4]	[4]	[3]
Q.5	a) Apply Named Entity Recognition (NER) to identify entities in the sentence: (i) "Dr. Smith from IBM visited Pune on 5th October 2025." (ii) "Google announced a partnership with the Indian Government in New Delhi."	[2]	[5]	[3]
	OR			
	b) Apply the concept of perception and planning to design a robot for warehouse item picking.	[2]	[5]	[3]
	c) Compare the architectures and real-world applications of BERT and GPT models.	[4]	[5]	[2]
Q.6	a) Identify two key features of cloud-based AI platforms that make them suitable for large-scale applications.	[2]	[6]	[2]
	OR			
	b) State one purpose of using Prometheus in AI system monitoring.	[2]	[6]	[2]
	c) Describe how cloud-based deployment enables real-time AI applications such as chatbots or recommendation systems.	[4]	[6]	[2]

Note: [BT Level – 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create]