UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: Intro. to Artificial Intelligence & ML **Semester: Vth**
Program: B.Tech CSE-BAO, GG **Time 03 hrs.**
Course Code: CSAI3004P **Max. Marks: 100**

SECTION A
1. Each Question will carry 4 Marks
2. Instruction: Write short answer
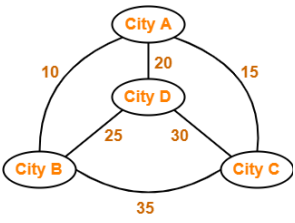
S. No.		Marks	CO
Q 1	Describe the use of ant colonies optimization in AI domain.	4	CO1
Q2	Explain propositional logic with the help of example.	4	CO2
Q3	Name the quantifiers and connectives of first order logic.	4	CO3
Q4	Illustrate the applications of Artificial Intelligence.	4	CO1
Q5	Discuss the travelling salesperson problem with the help of example.	4	CO1

SECTION B
1. Each question will carry 10 marks
 2. Instruction: Write short / brief notes

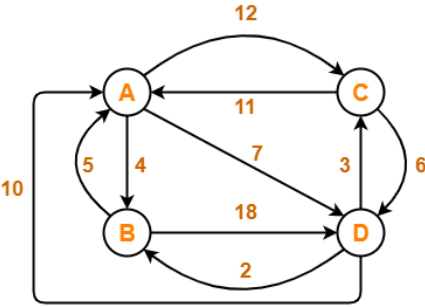|			

Q6	Covert following statements into FOL using quantifier:
	    1. All birds fly.
	    2. Every man respects his parent.
	    3. Some boys play cricket.
	    4. Not all students like both Mathematics and Science.
	    5. Only one student failed in Mathematics.
		10	CO2

Q7	Differentiate between artificial intelligence and machine learning in tabular form.	10	CO3
Q8	Convert to FOPL, then to CNF and finally prove that "Kitty drinks milk" by resolution graph. (i) Cats like milk	10	CO2

	(ii) Cats drink everything they like (iii) Kitty is a cat **To Prove:** Kitty drinks milk **OR** Differentiate between supervised learning and reinforcement learning.		
Q9	Given a graph below. Compute the shortest path, if the origin city is City A using travelling salesman problem. 	**10**	**CO2**

<div align="center">**SECTION-C**</div>

Instruction: Q10 has a internal choice question.

Q10	(a) Given a graph below. Compute the shortest path, if the origin city is City A using travelling salesman problem. (b) Explain the applications of machine learning in detail. **OR**	**10+10=20**	**CO4**

	(a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is 4/52, then calculate posterior probability P(King|Face), which means the drawn face card is a king card using bayes' theorem. (b) Discuss the various applications of Bayes' theorem in Artificial intelligence.		

Q11	(a) Consider the following knowledge base:
	
	    1. Gita likes all kinds of food.
	    2. Mango and chapati are food.
	    3. Gita eats almond and is still alive.
	    4. Anything eaten by anyone and is still alive is food.
	
	Poof the following statement using resolution method in Propositional Logic.
	
	Goal: Gita likes almond.
	
	(b) Explain the key elements of machine learning in detail.
		10+10=20	**CO4**