

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Seventh Semester, B.E. - Electronics and Communication Engineering****Semester End Examination; February - 2022****Artificial Intelligence and Machine Learning**

Time: 3 hrs

Max. Marks: 100

Course Outcomes*The Students will be able to:**CO1: Apply the knowledge of Artificial Intelligence and Machine Learning.**CO2: Analyze the problem and identify the appropriate method to solve it.**CO3: Design and conduct experiments as well as analyze and interpret data using Machine Learning Algorithms.**CO4: Design and develop the different models of AI and ML.**CO5: Get familiarized with the tools mandatory for handling problem solving techniques.***Note: I) PART - A is compulsory. Two marks for each question.****II) PART - B: Answer any Two sub questions (from a, b, c) for Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	Define Artificial Intelligence given by Winston.	2	L2	CO1	PO1
b.	State Baye's rule.	2	L2	CO1	PO1
c.	What is concept learning?	2	L2	CO2	PO2
d.	Explain any two framework elements of Markov decision problem.	2	L2	CO1	PO1
e.	Explain Support Vector Machine.	2	L2	CO2	PO2
II : PART - B		90			
UNIT - I		18			
1 a.	Explain the Cognitive modeling approach and three ways to do this.	9	L2	CO1	PO1
b.	Explain the importance of AI with few applications.	9	L4	CO2	PO2
c.	Interpret the problem solving approach considering the toy-problem.	9	L4	CO2	PO2
UNIT - II		18			
2 a.	State Baye's rule and explain one simple application applying Baye's rule.	9	L2	CO1	PO1
b.	Write note on the variable elimination algorithm with example.	9	L4	CO2	PO2
c.	Describe Gibbs sampling algorithm for approximate inference in Bayesian network.	9	L4	CO2	PO2
UNIT - III		18			
3 a.	What is the significance of machine learning? Explain the types of problems in machine learning with examples.	9	L4	CO2	PO2
b.	Describe intelligent agents. List the five types of agents based on their degree of perceived intelligence and capability with supporting examples.	9	L4	CO2	PO2
c.	Illustrate FP-Growth algorithm.	9	L3	CO3	PO3

UNIT - IV**18**

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| 4 a. Briefly explain K-means clustering with an example. | 9 | L4,5 | CO4 | PO2,3 |
| b. Explain Q-Learning algorithm with example. | 9 | L3 | CO3 | PO3 |
| c. Write a brief note on Hidden Markov models starting from assumptions considered. List its types and applications. | 9 | L3 | CO3 | PO3 |

UNIT - V**18**

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| 5 a. How to build a decision tree? Explain the steps needed to build a decision tree with example. Construct decision tree after learning from example. | 9 | L4,5 | CO4 | PO2,3 |
| b. Illustrate Bayesian networks with example and list the limitations of Bayesian networks. | 9 | L3 | CO3 | PO2 |
| c. Explain the working of case based reasoning. | 9 | L3 | CO3 | PO3 |

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