KUMARAGURU
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**B.E DEGREE EXAMINATIONS: NOV/DEC 2024**

(Regulation 2018)

Seventh Semester

**MECHATRONICS ENGINEERING**

U18MCE0004**:** Artificial Intelligence and Machine Learning

## COURSE OUTCOMES

**CO1:** Express the basic concepts of Artificial Intelligence
**CO2:** Demonstrate the usage of planning and decision making.
**CO3:** Interpret the ideas of machine learning by supervised and unsupervised learning methods
**CO4:** Apply linear Regression and Logistic Regression machine learning methods
**CO5:** Summarize the concepts of Artificial Neural Networks
**CO6:** Describe various Artificial Neural Networks methodology

**Time: Three Hours**                                                                              **Maximum Marks: 100**

**Answer all the Questions:-**
**PART A (10 x 2 = 20 Marks)**
**(Answer not more than 40 words)**

| | | | |
|---|---|---|---|
| 1. | What is meant by Turing test? | CO1 | [$K_2$] |
| 2. | 'Performance measure' is evaluated based on the 'environment state' not on the 'agent states'. Discuss. | CO1 | [$K_2$] |
| 3. | Comment on "Decision making approaches". | CO2 | [$K_2$] |
| 4. | List the advantages of simple model over complex model. | CO2 | [$K_2$] |
| 5. | Mention the reasons for Noise in data. | CO3 | [$K_2$] |
| 6. | Infer the Gradient Descent Algorithm | CO4 | [$K_2$] |
| 7. | Comment on Model selection for Machine Learning. | CO3 | [$K_2$] |
| 8. | Define cost function. | CO4 | [$K_2$] |
| 9. | List the major domains of AI. | CO5 | [$K_2$] |
| 10. | Comment on NLP. | CO6 | [$K_2$] |

**Answer any FIVE Questions:-**
**PART B (5 x 16 = 80 Marks)**
**(Answer not more than 400 words)**

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|---|---|---|---|---|
| 11. | a) | Discuss the properties of task environments. | 10 | CO1 [$K_2$] |
| | b) | Explain 'GOAL-BASED AGENTS'. | 6 | CO1 [$K_2$] |

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|---|---|---|---|---|---|
| 12. | a) | Describe the types of knowledge. | 10 | CO2 | [K₂] |
| | b) | Compare forward and backward reasoning. | 6 | CO2 | [K₃] |

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| 13. | | Explain the process of learning a class from examples. | 16 | CO3 | [K₃] |

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| 14. | a) | Explain the steps of 'K-means' algorithm. | 8 | CO4 | [K₂] |
| | b) | Compare linear regression and logistic regression. | 8 | CO4 | [K₂] |

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|---|---|---|---|---|---|
| 15. | | Define 'Overfitting'. Explain the effects of overfitting and possible methods to avoid it. | 16 | CO4 | [K₂] |

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|---|---|---|---|---|---|
| 16. | a) | Compare the biological neuron with ANN and explain its part with neat sketch | 8 | CO5 | [K₂] |
| | b) | Explain the NLP tasks in detail. | 8 | CO6 | [K₂] |

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