



B.E. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Seventh Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U18ECE0014: Machine Learning

COURSE OUTCOMES

CO1: Compare the various learning methods.

CO2: Compare and apply neural network-based learning algorithm.

CO3: Apply appropriate linear model for a given application.

CO4: Apply probabilistic, clustering and feature reduction technique for suitable application.

CO5: Choose appropriate graphical model for given application.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|--|-----|-------------------|
| 1. What is Machine Learning? | CO1 | [K ₁] |
| 2. Contrast Training and Testing in Machine Learning. | CO1 | [K ₂] |
| 3. Illustrate the model of a perceptron. | CO2 | [K ₂] |
| 4. Compare the analogy of biological and artificial neurons. | CO2 | [K ₂] |
| 5. Recall the equation of Simplest Linear Model i.e Linear Regression. | CO3 | [K ₁] |
| 6. Contrast discriminative and generative modelling. | CO3 | [K ₂] |
| 7. What is curse of dimensionality? | CO4 | [K ₁] |
| 8. What are Posterior and Prior Probabilities? | CO4 | [K ₁] |
| 9. What is meant by CART? | CO5 | [K ₁] |
| 10. What are the types two graphical models? | CO5 | [K ₁] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|---|---|-----|-------------------|
| 11. a) Explain various types of learning in detail. | 8 | CO1 | [K ₂] |
| b) Relate the concept of VC-dimension with Generalization. | 8 | CO1 | [K ₂] |
| 12. a) Explain the architecture of Multilayer perceptron with neat diagram. | 8 | CO2 | [K ₂] |
| b) Outline the phases of Backpropagation algorithm. | 8 | CO2 | [K ₂] |

13.	Explain the concept of maximum margin classifiers used in support vector machine.	16	CO3	[K ₂]
14.	How is K-means clustering performs the classification? Explain with an example.	16	CO4	[K ₃]
15.	a) With appropriate assumptions, explain Hidden Markov Model (HMM) as a finite state machine.	12	CO5	[K ₃]
	b) Outline the basic Algorithm for Top-Down Induction of Decision Trees.	4	CO5	[K ₂]
16.	Explain the concept of Principal Component Analysis for dimensionality reduction.	16	CO4	[K ₂]
