Reg. No.						
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Question Paper Code

13742

M.E - DEGREE EXAMINATIONS, APRIL / MAY 2025

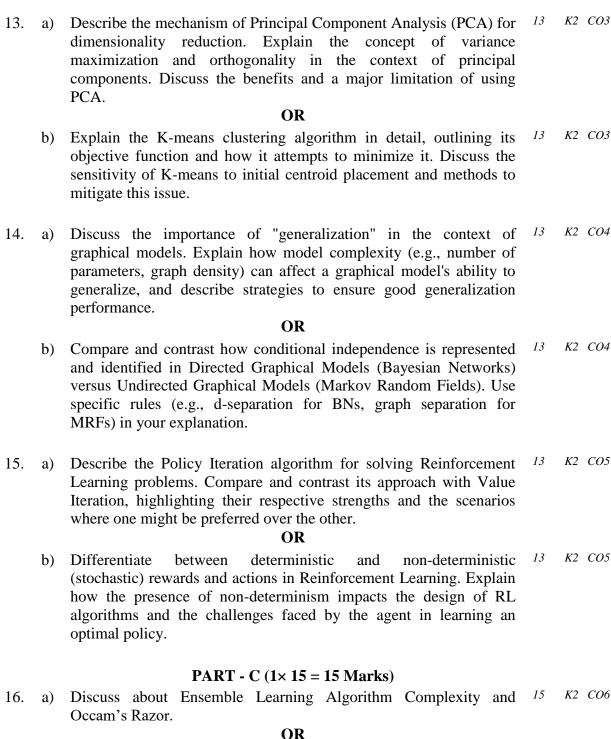
Second Semester

Big Data Analytics

24PBDPC203 – MACHINE LEARNING TECHNIQUES

Regulations - 2024

Duration: 3 Hours	lax. M	arks: 100							
PART - A $(10 \times 2 = 20 \text{ Marks})$ Answer ALL Questions	Marks	K- Level CO							
1. State the Law of Total Probability.	2	K2 CO1							
2. What is the primary goal of decision theory in machine learning?	2	K2 CO1							
3. Give an example of a linear model used for classification.	2	K2 CO2							
4. How does information flow in a feed-forward network?	2	K2 CO2							
5. How does Factor Analysis differ from Principal Component Analysis in it fundamental objective?	2 2	K2 CO3							
6. Differentiate between feature selection and feature extraction a dimensionality reduction methods.	ıs 2	K2 CO3							
7. How do Conditional Random Fields (CRFs) differ from Hidden Marko Models (HMMs) in their modeling approach?	v 2	K2 CO4							
8. For what kind of data is an HMM primarily designed to model?	2	K1 CO4							
9. List the concept of uniform random sampling.	2	K1 CO5							
10. Define sampling.	2	K1 CO6							
PART - B (5 × 13 = 65 Marks) Answer ALL Questions 11. a) Elaborate on Baye's Decision Theory for classification. How does leverage prior knowledge and observed data to make optimal prior should be a second of the control of the c		K2 CO1							
classifications? Discuss its advantages and limitations. OR									
b) Discuss the fundamental concepts of information theory, includin entropy and information gain, and explain their significance i machine learning, particularly in decision tree algorithms.	_	K2 CO1							
12. a) Describe the boosting technique. How does it create strong learner from weak learners?	er ¹³	K2 CO2							
OR									
b) Explain the back-propagation algorithm in detail. How does it enable neural networks to learn from data?	e ¹³	K2 CO2							
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create		13742							



15 K2 CO6 Elaborate the sampling methods used in machine learning algorithms with examples.