

MAJOR ELECTIVE COURSE – I MACHINE LEARNING AND APPLICATIONS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The ability of a machine learning model to work well on test data is called _____. (i) Overfitting (ii) Classification (iii) Generalization (iv) Training	K1	CO1
	2	Noise refers to _____ in data that affect learning. (i) Patterns (ii) Errors (iii) Labels (iv) Features	K2	CO1
2	3	Bayesian Decision Theory is based on _____ theorem. (i) Pythagoras (ii) Bayes (iii) Probability (iv) Regression	K1	CO2
	4	A decision tree that predicts numerical values is called _____ tree. (i) Classification (ii) Binary (iii) Regression (iv) Decision	K2	CO2
3	5	K-means algorithm uses _____ to represent cluster centers. (i) Mean value (ii) Median (iii) Centroid (iv) Mode	K1	CO3
	6	Hidden Markov Models handles _____ data. (i) Random (ii) Sequential (iii) Image (iv) Static	K2	CO3
4	7	Reinforcement learning is widely used in _____ systems. (i) Banking (ii) Game (iii) Medical (iv) Weather	K1	CO4
	8	Boosting improves weak _____. (i) Features (ii) Data (iii) Learners (iv) Labels	K2	CO4
5	9	Blocking is used to reduce _____ variation. (i) Desired (ii) Unwanted (iii) Output (iv) Input	K1	CO5
	10	In K-fold cross-validation, data is divided into _____ equal parts. (i) N (ii) Two (iii) K (iv) Ten	K2	CO5

Cont...

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain supervised learning with examples.	K2	CO1
		(OR)		
	11.b.	Interpret about noise and its impact on learning systems.		
2	12.a.	Analyse about loss function and risk minimization.	K4	CO2
		(OR)		
	12.b.	Examine the advantages and limitations of decision trees.		
3	13.a.	Compare K-means and hierarchical clustering.	K4	CO3
		(OR)		
	13.b.	Examine the behaviour of discrete Markov processes.		
4	14.a.	Explain single state case in reinforcement learning.	K5	CO4
		(OR)		
	14.b.	Explain boosting technique and its advantages.		
5	15.a.	Explain the factors, response, and strategy of experimentation in machine learning.	K5	CO5
		(OR)		
	15.b.	Explain the guidelines for machine learning experiments.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain dimensions of supervised machine learning algorithms with example.	K2	CO1
2	17	Analyze the pruning methods and their importance in decision trees.	K4	CO2
3	18	Explain Hidden Markov Model in detail with diagram.	K5	CO3
4	19	Describe methods for generating diverse learners and their importance.	K4	CO4
5	20	Interpret K-fold cross-validation with an example.	K5	CO5

Z-Z-Z

END