Dr. A.P.J. Abdul Kalam Technical University (AKTU) · B.Tech Theory Examination

Machine Learning Techniques

BCS055 · Jan 2026

Time: 3 Hours **Max. Marks: 70**

Attempt all Sections. In case of any missing data, choose suitably.

SECTION A

1(a)	Define Machine Learning.	2	U1
1(b)	What is a well-defined learning problem?	2	U1
1(c)	State any two applications of Logistic Regression.	2	U2
1(d)	What is Entropy in Decision Tree Learning?	2	U3
1(e)	Define Support Vector Machine (SVM).	2	U2
1(f)	What is backpropagation in neural networks?	2	U4
1(g)	What is Q-learning?	2	U5

SECTION B

2(a)	Explain types of learning in Machine Learning with suitable examples.	7	U1
2(b)	Describe Linear Regression and its assumptions.	7	U2
2(c)	Explain Naïve Bayes classifier with an example.	7	U2
2(d)	Discuss the properties and issues of Support Vector Machines.	7	U2
2(e)	Explain k-Nearest Neighbour (k-NN) algorithm and its limitations.	7	U3

SECTION C

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3(a)	Explain the ID3 algorithm for Decision Tree learning.	7	U3
3(b)	Discuss inductive bias and inductive inference in decision trees.	7	U3
4(a)	Explain perceptron and multilayer perceptron with neat diagram.	7	U4
4(b)	Derive the Backpropagation algorithm for training neural networks.	7	U4
5(a)	Explain the architecture of Convolutional Neural Networks (CNN).	7	U4
5(b)	Discuss applications of Deep Learning with suitable case studies.	7	U4
6(a)	Explain Reinforcement Learning with Markov Decision Process.	7	U5
6(b)	Describe Q-Learning algorithm and its applications.	7	U5
7(a)	Explain Genetic Algorithm cycle with suitable example.	7	U5

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