

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 12009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Fifth Semester

Biomedical Engineering

U19BMV18 – MACHINE LEARNING TECHNIQUES IN MEDICINE

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 – Evaluating
	K2 – Understanding	K4 – Analyzing	K6 – Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How does Machine Learning work?	2	K1	CO1
2.	List out the applications of machine learning.	2	K1	CO1
3.	What is Data Wrangling?	2	K1	CO2
4.	What are popular source of machine learning datasets?	2	K1	CO2
5.	What is a Decision tree?	2	K1	CO3
6.	Why do you need a Bayesian Network?	2	K1	CO3
7.	List the methods followed to Compensate Breathing Motion During Radiation Therapy.	2	K1	CO4
8.	Infer image-based respiratory gating.	2	K2	CO4
9.	What are the types of hematology?	2	K1	CO5
10.	How is machine learning used in hematology?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Explain in detail about different types of machine learning.	13	K3	CO1

(OR)

- b) Discuss in detail about various machine learning algorithms. 13 K3 CO1
12. a) Explain in detail about Machine learning Life cycle. 13 K3 CO2

(OR)

- b) Explain about Data Preprocessing in Machine learning. 13 K3 CO2
13. a) Analyze the decision tree using ID3 algorithm by considering the training dataset shown in the Table below 13 K4 CO3

Outlook	Temp	Humidity	Windy	Golf?
rainy	hot	high	false	no
rainy	hot	high	true	no
overcast	hot	high	false	yes
sunny	mild	high	false	yes
sunny	cool	normal	false	yes
sunny	cool	normal	true	no
overcast	cool	normal	true	yes
rainy	mild	high	false	no
rainy	cool	normal	false	yes
sunny	mild	normal	false	yes
rainy	mild	normal	true	yes
overcast	mild	high	true	yes
overcast	hot	normal	false	yes
sunny	mild	high	true	no

(OR)

- b) Analyze the Bayesian Network for the below conditions: 13 K4 CO3
The alarm of my house can be activated by a burglary or by an earthquake. When it is activated you can receive a call by John or by Mary.
14. a) Demonstrate an Artificial Neural Network (ANN) to Model and Predict Breathing Motion for maintaining beam and tumor alignment 13 K3 CO4

(OR)

- b) Illustrate the Real-Time Tumor Tracking Based on Fluoroscopic Images. 13 K3 CO4
15. a) Discuss in brief about the Automatic analysis of blood and bone marrow smears. 13 K3 CO5

(OR)

- b) Compile the various types of object segmentation in blood cells. 13 K3 CO5

PART – C

(1 x 15 = 15 Marks)

- | Q.No. | Questions | Marks | KL | CO |
|--------|---|-------|----|-----|
| 16. a) | Present the measurement techniques used for describing the blood and bone marrow cells. | 15 | K3 | CO5 |

(OR)

- b) With examples, discuss in brief about the methods used for image based motion correction, detection and prediction of radiotherapy errors. 15 K3 CO4