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: 120014

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 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.	In the context of computer system, what is meant by learning?	2	K2	CO1
2.	Distinguish between supervised and unsupervised learning?	2	K2	CO1
3.	Mention the steps involved in machine learning life cycle.	2	K2	CO2
4.	Data Privacy is an important concern in our day-to-day life. Write any two ethics need to be followed by ML programmers in deploying the privacy of the user.	2	K3	CO2
5.	Sketch the schematic of an arbitrary decision tree.	2	K3	CO3
6.	List the elements of decision tress.	2	K2	CO3
7.	Mention any two challenges in imaging a moving organ.	2	K3	CO4
8.	List any four errors that can affect the performance of radiotherapy.	2	K2	CO4
9.	Mention the significance of automating the analysis of microscopic images.	2	K2	CO5
10.	To diagnose the abnormalities and malignancies in bodily fluid cells, what are the minimum hardware and software requirements needed to automate the process?	2	K3	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	How is machine learning transforming healthcare? Discuss the applications of machine learning in disease prediction analytics and medical imaging.	13	K2	CO1
		(OR)			
	b)	Why Python is the Preferred Language for Machine Learning? Elaborate on comparative analysis of Machine Learning Frameworks in different languages.	13	K2	CO1
12.	a)	Distinguish between centralized and decentralized data teams. Describe the skills and Competencies needed for a Modern Data Team.	13	K2	CO2
		(OR)			
	b)	With suitable illustration elucidate in detail about the process involved in improving the data quality and cleaning.	13	K2	CO2
13.	a)	Elaborate on the applications of Graph Theory in Computer Science. Also explain the impact of Graph Theory on Modern computation.	13	K2	CO3
		(OR)			
	b)	Identify & briefly discuss two-real-world applications of Bayesian networks in fields such as medicine & finance.	13	K3	CO3
14.	a)	Analyze the trade-offs between image quality and processing time in motion correction algorithms. How does these trade-offs affect the choice of algorithms in clinical settings?	13	K4	CO4
		(OR)			
	b)	Analyze the challenges of integrating machine learning algorithm into existing clinical workflows in radiotheraphy.	13	K4	CO4
15.	a)	Explain about the fully automated blood smear analysis system with necessary illustration.	13	K2	CO5
		(OR)			
	b)	Identify the challenges in measuring cell morphology in hematological cytology. Discuss the role of machine learning in hematological cytology.	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Analyse the significance of real-time motion management in radiotheraphy. How do machine learning algorithms facilitate their process, and what are the potential benefits for patient outcomes?	15	K4	CO4
		(OR)			
	b)	Analyse the advantages and limitation of using machine learning algorithm for automated classifications of blood cell types compared to traditional manual methods.	15	K4	CO5