

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2025-26		
Program: B. Tech Scheme IIB		
Regular Examination: LY Semester: VII		
Course Code: AIDLC7042 and Course Name: AI in Healthcare		
Date of Exam: 02/12/2025	Duration: 2.5 Hours	Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	What is the role of Expert Systems in iPHR?		CO5	U
b)	Differentiate between a traditional PHR and an Intelligent PHR with examples.		CO1	U
c)	What are Electronic Health Records (EHRs) and how are they used?		CO5	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain NLP methods such as n-gram models, Hidden Markov Models (HMM), and Conditional Random Fields (CRF) with healthcare examples.		CO4	U
b)	Explain and differentiate between the decision fusion methods — Majority Voting, Weighted Voting, and Bayesian Fusion. Based on your understanding, which method would be more appropriate to use in a high-risk healthcare application, and why?		CO2	U
c)	Explain the role of AI in follow-up care.		CO1	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain the components and workflow of Digital Therapeutics (DTx) with the help of suitable healthcare case studies.		CO6	U
b)	Explain the key features and healthcare applications of Virtual Reality (VR) with suitable examples.		CO6	U

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c)	Explain the different phases of Machine Learning model development in the context of healthcare applications, and illustrate the workflow with a neat diagram.		CO3	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Demonstrate how a Modular Neural Network (MNN) can be applied to predict cancer types using pathology images, genetic data, and patient history, and explain how each module contributes to the final prediction.		CO2	AP
b)	Applying the steps of a hospital dialogue-system would process the patient message: 'I want to book a cardiology appointment next Monday.' • Break down the step-by-step pipeline (from input parsing to response generation) (4 Marks) • Identify the user intent and relevant entities,(3 Marks) and • Evaluate how using such a system reduces hospital administrative workload.(3 Marks)		CO4	AP
c)	Apply the concept of prediction ethics to a healthcare scenario and explain how ethical considerations can influence patient treatment decisions and their trust in AI systems.		CO3	AP
