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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January 2024 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 19ML7OE2IO **Max Marks: 100**
Course: IoT Technologies for Healthcare

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Provide a detailed classification of wearable devices used in IoT for smart healthcare systems. Discuss the key categories of these devices, highlighting their functionalities and applications in monitoring and improving health	CO1	PO1	10
	b)	Investigate the research challenges and open issues associated with the implementation of wearable devices in IoT-based smart healthcare systems. Discuss potential hurdles and areas that require further exploration, offering insights into overcoming these challenges to advance the field.	CO1	PO1	10
		UNIT - II			
2	a)	Explain the process of feature extraction in the context of IoT-based diseases prediction and diagnosis systems. How does effective feature extraction contribute to the performance of machine learning models in healthcare applications?	CO1	PO1	10
	b)	Evaluate the importance of model selection in developing an effective IoT-based diseases prediction and diagnosis system. Discuss key considerations in choosing appropriate machine learning models and their impact on the system's predictive capabilities.	CO1	PO1	10
		UNIT - III			
3	a)	Elaborate on the significance of big data and the Internet of Things (IoT) in the experimental study and analysis of health conditions, particularly in the context of tension-type headache and diabetes. How do these technologies contribute to data collection, analysis, and interpretation for meaningful healthcare insights?	CO2	PO2	10
	b)	Evaluate the limitations and challenges associated with using IoT in healthcare research, particularly in the context of studying	CO2	PO2	10

			tension-type headache and diabetes. Address ethical considerations related to data privacy, security, and patient consent in the collection and analysis of health-related information through IoT devices			
			UNIT - IV			
	4	a)	Provide an in-depth overview of IoT-enabled technologies and services in the healthcare sector. Discuss the types of IoT sensors specifically related to healthcare and their applications in monitoring and improving patient outcomes.	**CO2**	**PO2**	**10**
		b)	Examine the significance of healthcare personal data and health information in the context of IoT. Discuss the challenges and concerns related to the security and privacy of this sensitive information.	**CO2**	**PO2**	**10**
			OR			
	5	a)	Explore the integration of IoT healthcare frameworks with cloud computing. Discuss the advantages and challenges associated with this integration, emphasizing how it contributes to the overall efficiency and scalability of healthcare services.	**CO3**	**PO3**	**10**
		b)	Evaluate the techniques applied to resolve security issues in IoT healthcare. Discuss the importance of proactive measures and strategies to prevent, detect, and mitigate security threats in a healthcare IoT environment.	**CO3**	**PO3**	**10**
			UNIT - V			
	6	a)	Discuss the transformative impact of the Internet of Things (IoT) in the medical sector, highlighting key applications and benefits. Explore how IoT technologies contribute to advancements in patient care, treatment, and overall healthcare management.	**CO3**	**PO3**	**10**
		b)	Explore the applications of Intense Consistent Glucose Monitoring (CGM) and insulin-taking devices in the context of IoT. Discuss how these devices contribute to personalized healthcare and improved management of chronic conditions.	**CO3**	**PO3**	**10**
			OR			
	7	a)	Explore the concept of "Beaming Hospitals" and how IoT technologies contribute to the concept. Discuss the benefits and potential challenges associated with the integration of IoT in creating advanced and connected healthcare facilities.	**CO3**	**PO3**	**10**
		b)	Examine the role of IoT in associated respiratory inhalers and digital sensor treatment. Discuss the impact of these technologies on patient outcomes and the efficiency of healthcare delivery.	**CO3**	**PO3**	**10**

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