U.S.N.										

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

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: MEDICAL ELECTRONICS ENGINEERING **Duration: 3 hrs.**
Course Code: 19ML5PE1WS **Max Marks: 100**
Course: Wearable Sensors **Date: 07.03.2023**

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

1	a)	Highlight the issues in the fabrication of wearable sensors.	**10**
	b)	With a neat sketch, explain the electrochemical sensor.	**10**

OR

2	a)	Elaborate on Surface Acoustic Wave sensor based on the piezoelectric effect.	**10**
	b)	Illustrate the design implementation of the heart rate monitoring device using PPG sensor.	**10**

UNIT - II

3	a)	Discuss the five distinct categories of issues and threats in IoT security?	**10**
	b)	What type of challenges are faced while providing security in IoT?	**05**
	c)	Write a note on privacy preservation.	**05**

OR

4	a)	Brief about federation of administrative domains.	**06**
	b)	How security routing plays a major role while dealing with patient data?	**06**
	c)	Discuss about the cloud-side of the system and the associated communication protocols.	**08**

UNIT - III

5	a)	Illustrate the generalized system architecture of a wearable body sensor networks with a neat block diagram.	**12**
	b)	Who are labeled as outsider and insider attacks in wearable body sensor network? Explain.	**08**

UNIT - IV

6	a)	List the types of implantable medical devices. Explain in brief each type.	**10**

b) Elaborate the three critical trade-offs in implantable medical device security design. **10**

UNIT - V

7 a) Depict a function block diagram of a GC module. **06**

b) Brief the main constraints in applying security for healthcare system using WBSN. **08**

c) Describe the ideal biometric characteristics. **06**

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