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Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U9607

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Professional Elective

Electronics and Communication Engineering

21UECV607- EMBEDDED SYSTEMS IN MEDICAL DEVICES

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. Signal Filtering may reduce undesirable _____signal CO1-U

   (a) Register (b) Sensor (c) optical (d) noise

2. Which of the following is a preferred electrode for measuring EMG? CO1-U

   (a) surface electrodes (b) needle electrodes

   (c) pregelled electrodes (d) scalp electrodes

3. Generally what is the material of needle electrodes? CO1- U

   (a) stainless steel (b) copper (c) lead (d) iron

4. The blood pressure within the glumerular capillaries is _____ of mercury. CO1- U

   (a) 80 mm (b) 70-80 mm (c) 90 mm (d) 70-90 mm

5. Which of the following is not the electrolyte? CO1 -U

   (a) Bicarbonate (b) Potassium (c) Magnesium (d) Sodium

PART – B (5 x 3= 15 Marks)

6. Differentiate Polarizable Electrodes and Non Polarizable Electrodes. CO1-U

7. Differentiate Polarisable and non-polarisable Electrodes. CO1 -U

8. Define Cardiac Output. CO1 -U

9. How is auto analyzer useful in medical field? CO1 -U

10. What is Body area network? CO1 -U

PART – C (5 x 16= 80Marks)

11.	(a)	Describe about the bio potential amplifiers that are used for processing the signals in medical devices.	CO2-Ana	(16)
		Or		
	(b)	How Medical devices are developed and tested when introduced in field with clear study?	CO2-Ana	(16)
12.	(a)	How design requirements are implemented in Embedded Systems and clarify any three parameters from design requirements.	CO2 -App	(16)
		Or		
	(b)	Give an detailed case study on MRI and CT Scan .Illustrate how embedded system is applied in these devices	CO2 -App	(16)
13.	(a)	Give a detailed case study and illustrate how embedded system is applied in respiratory plethysmography	CO5-Ana	(16)
		Or		
	(b)	Analyze how embedded system plays a major role in health care monitoring.	CO5-Ana	(16)
14.	(a)	Give a detailed explanation about ISFET and IMFET and how they are beneficial in clinical laboratories	CO1-U	(16)
		Or		
	(b)	Explain in detail about the role of various sensors in Embedded devices.	CO1-U	(16)
15.	(a)	Explain the uses and benefits of smart m-health sensing that provide health care support to patient.	CO1-U	(16)
		Or		
	(b)	Explain the role of wireless sensor technology in health care system.	CO1-U	(16)