C **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U4607

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

Professional Elective

Electronics and Communication Engineering

21ECV607- EMBEDDED SYSTEMS IN MEDICAL DEVICES

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. Which of the following are the sources of embedded system? CO1-U

   (a) Cell Phones (b) Washing Machine (c) Smart Watches (d) All of the above

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. Define the types of addressing modes? CO1-U

7. Write the functions of timers in LPC2148. CO1 -U

8. What is Trojan horse and list out the maintenance procedure to prevent the system? CO1 -U

9. Define Cloud computing. CO1 -U

10. State interrupt vector table. CO1 -U

PART – C (5 x 16= 80Marks)

11. (a) Express RTL and how the RTL view of microprocessor is Designed in Embedded system CO2-Ana (16)

Or

(b) How Medical devices are developed and tested when introduced in field with clear study? CO2-Ana (16)

12. (a) Explain about Electrocardiograph with neat block diagram 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) Clarify the design testing and de bugging in software embedded system and validate all the frameworks from design testing and de bugging. CO5-Ana (16)

Or

(b) Specify all the frame works from path sensitizing and verify all the parameters form path sensitizing with neat diagrams 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) How would you use the ultrasonic wave in measuring CO1-U (16)
    i) SPo2
    ii) Pulse rate

Or

(b) Explain the role of wireless sensor technology in health care system. CO1-U (16)