

C

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)

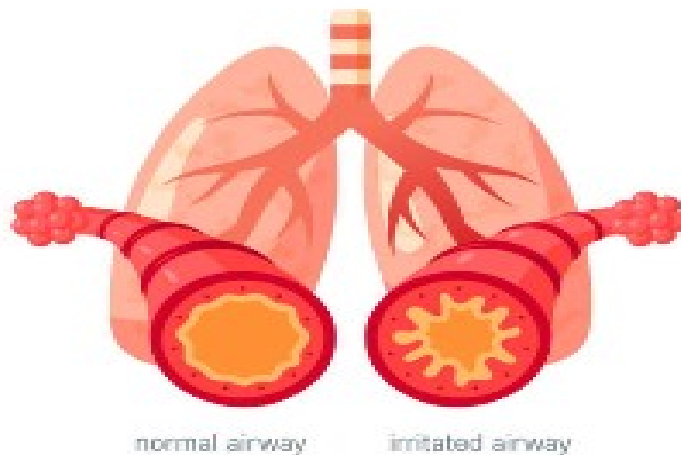
1. Signal Filtering may reduce undesirable _____ signal CO1-U
(a) Register (b) Sensor (c) optical (d) noise
2. Structured design methodology is an approach to design that adheres to rules CO1-U
based on principles such as
(a) Top-down refinement (b) Bottom-up design
(c) Data flow analysis (d) All of the above
3. The process of debugging begins as soon as the code of the software CO1-U
is _____.
(a) Started (b) Completed
(c) Both (a) and (b) (d) None of the above
4. When there is an embedded component in a real time system, it is known CO1-U
as _____.
(a) Firm time embedded system (b) Simple time embedded system
(c) Real time embedded system (d) Complex time embedded system
5. Tasks or threads that are initiated with repeating duration between CO1-U
invocations are called-----
(a) Periodic (b) Aperiodic (c) Execution time (d) Sporadic

PART – B (5 x 3= 15 Marks)

- 6. Differentiate HDMI and RCA connectors. CO1-U
- 7. Explain the concept of pipelining. CO1-U
- 8. Define cyber security and Write about the various types of hackers and their functions. CO1-U
- 9. List out the Biomedical applications in Embedded system CO1-U
- 10. Recall the structure of embedded c program. CO1-U

PART – C (5 x 16= 80 Marks)

- 11. (a) How Medical devices are developed and tested when introduced in field with clear study? CO1-U (16)
Or
(b) Explain about generic medical instrumentation system with neat block diagram. CO1-U (16)
- 12. (a) How Embedded concepts are applied to EMG, EEG, ECG medical devices. CO2-App (16)
Or
(b) How design requirements are implemented in Embedded Systems and clarify any three parameters from design requirements CO2- App (16)
- 13. (a) Clarify the design testing and debugging in software embedded system and validate all the frame works from design testing and debugging. CO5-Ana (16)
Or
(b) CO5-Ana (16)



Identify the disease associated with the above diagram and design and develop the smart device to treat them also explain the procedure and working of the device with neat diagram.

14. (a) With neat diagram Briefly describe the architecture of operating system. CO1-U (16)
- Or
- (b) With neat diagram explain about the Harvard Architecture and Von Neumann Architecture. CO1-U (16)
15. (a) Design the m-health monitoring and management system for Chronic Obstructive Pulmonary Diseases CO5- Ana (16)
- Or
- (b) How would you use the ultrasonic wave in measuring CO5-Ana (16)
- (i) SPO₂
 - (ii) Pulse rate

