

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

BE/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2025

Fifth Semester

Biomedical Engineering

BM3551 - Embedded Systems and IOMT

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Differentiate between CISC and RISC architecture Model.	L2	1	2
2.	State the key characteristics of RAM.	L1	1	2
3.	Highlight the importance of watchdog timer in embedded systems.	L1	2	2
4.	Compare and Contrast memory interfacing from I/O device interfacing.	L2	2	2
5.	Provide examples of application software commonly used in embedded systems.	L2	3	2
6.	What are state diagrams, and how are they used in system design?	L2	3	2
7.	List two benefits of implementing IoMT solutions in healthcare.	L1	4	2
8.	Define penetration testing in the context of IoT security.	L1	4	2
9.	Mention the role of neuro sensors in patient monitoring and data collection.	L1	5	2
10.	Mobile and cloud technologies improve patient care and data accessibility. Justify?	L3	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Discuss the application areas and categories of embedded processors and also discuss its challenges in embedded system design. Or	L3	1	16
	b Analyze how bus organization affects the overall performance of an embedded system, particularly in multi-core processors.	L3	1	16
12.	a Evaluate the trade-offs involved in selecting A/D and D/A converters for a specific application requiring high fidelity. Or	L3	2	16
	b Examine the use of interrupt controllers in a robotic system to handle multiple sensor inputs efficiently.	L3	2	16
13.	a Assess how the integration of various IDE tools impacts the development workflow and productivity in embedded systems projects. Or	L3	3	16
	b Investigate the benefits and potential challenges of adopting MBSE	L3	3	16

in embedded systems development. How to overcome these challenges?

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| 14. | a | Describe the various communication technologies used in IoT, such as Wi-Fi, Zigbee, LoRa, and cellular networks, including their advantages and disadvantages. | L2 | 4 | 16 |
| Or | | | | | |
| | b | Describe how to interface sensors with an embedded target board like Raspberry Pi or Arduino, including necessary components and coding examples. | L2 | 4 | 16 |
| 15. | a | Analyze the effectiveness of the NSUM technique compared to traditional methods in managing diabetes. What metrics would you use for evaluation? | L4 | 5 | 16 |
| Or | | | | | |
| | b | Discuss the strengths and weaknesses of using a fuzzy-based expert system for diagnosing Alzheimer's disease compared to conventional diagnostic methods. | L4 | 5 | 16 |