

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE  
(AUTONOMOUS)

III-B.Tech II-Semester Regular Examinations (BR23), APRIL/MAY -2026  
EMBEDDED SYSTEMS (ECE)

Time: 3 hours

Max. Marks: 70

Question Paper consists of Part-A and Part-B  
Answer ALL the question in Part-A and Part-B

PART-A (10X2 = 20M)

		Marks	CO	BL
1. a)	List the different categories of Embedded Systems based on the area of applications.	(2M)	CO1	BL2
b)	List the differences between embedded system and general computing system.	(2M)	CO1	BL2
c)	Distinguish between serial and parallel communication devices.	(2M)	CO2	BL2
d)	Explain the serial communication SCI and SPI and compare them.	(2M)	CO2	BL2
e)	Explain any two wireless communication devices used in an Embedded System.	(2M)	CO3	BL2
f)	Give the functionalities of an Embedded device driver.	(2M)	CO3	BL1
g)	Explain the functional and non-functional requirements to choose a RTOS.	(2M)	CO4	BL2
h)	Explain multi task and their functions in embedded system.	(2M)	CO4	BL2
i)	Explain the different files generated during the cross-compilation of an Embedded C file	(2M)	CO5	BL2
j)	What is an IDE and what is the selection criterion of an IDE.	(2M)	CO5	BL1

PART-B (5X10 = 50M)

2a.	Explain the operational quality attributes to be considered in the design of an embedded system.	5(M)	CO1	BL3
b.	Explain the classification of the embedded systems and explain each of them.	5(M)	CO1	BL3
(OR)				
3a.	Distinguish between a sensor and an actuator. Also explain their role in an embedded system with suitable examples.	5(M)	CO1	BL2
b.	Explain how Digital Signal processor and Media processor are different than a general purpose processor and also compare them.	5(M)	CO1	BL2
4a.	Explain the purpose of a Real Time Clock and its functionality in an embedded system	5(M)	CO2	BL2
b.	Explain serial interface, timer and counters along with their usage in an embedded processor.	5(M)	CO2	BL2
(OR)				

5a.	Explain different I/O subsystems of embedded systems.	5(M)	CO2	BL2
b.	Explain the working of watchdog timer and also explain about control and status registers.	5(M)	CO2	BL3
6a.	What is a Device Driver? Explain different types of device drivers and use of them	6(M)	CO3	BL3
b.	Explain different Embedded Firmware design approaches.	4(M)	CO3	BL3
(OR)				
7a.	Explain the following: (i) interrupt (ii) Interrupt Vector address and (iii) Interrupt Service Routine (ISR)? Explain the role of ISR in an embedded application development	5(M)	CO3	BL2
b.	List out the limitations/drawbacks of assembly language based embedded firmware development.	5(M)	CO3	BL3

8	a) Compare various Task scheduling algorithms in RTOS	5(M)	CO4	BL3
	b) What is hardware software co-design? Explain the fundamental issues in hardware software co-design?	5(M)	CO4	BL3
(OR)				
9a.	Explain how thread and process are used in an embedded system.	6(M)	CO4	BL3
b.	Discuss how ICE is useful for testing an Embedded System with neat diagram.	4(M)	CO4	BL3

10a	Explain the following (i) Interpreter, (ii) Compiler and (iii) Linker	4(M)	CO5	BL3
b.	Compare various Laboratory tools used for embedded system implementation and testing.	6(M)	CO5	BL2
(OR)				
11a	What is a simulator? Explain the features, advantages and limitations of simulator based debugging	5(M)	CO5	BL3
b.	Explain the role of Integrated Development Environment (IDE) in the design of an Embedded System application	5(M)	CO5	BL3

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