KUMARAGURU
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B.E/B.TECH DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Sixth Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U18EEI6201**:** Embedded System

COURSE OUTCOMES

CO1: Understand the fundamentals of Embedded systems and its communication protocols.

CO2: Understand the basic concepts of RTOS for optimized CPU performance.

CO3: Understand the architectural features of ARM processor.

CO4: Apply the instructions to program ARM processor using Embedded C.

CO5: Analyze the internal peripherals of ARM processor using an IDE.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Define Embedded system.	CO1	[K_1]
2.	List the main components of Embedded system.	CO1	[K_1]
3.	Compare SPI and I2C Protocol.	CO2	[K_2]
4.	Define task scheduling.	CO2	[K_1]
5.	How many identifier bits are used in CAN 2.0 A and CAN 2.0 B?	CO3	[K_2]
6.	Draw the 3-stage pipeline organization of ARM 7 processor.	CO3	[K_2]
7.	Write an ARM C program for Blinking LEDs.	CO4	[K_3]
8.	Define Watch Dog Timer.	CO4	[K_2]
9.	Infer the necessity for Optimizing C code in Embedded programs.	CO5	[K_2]
10.	What is the function of C compiler in IDE?	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	Illustrate with functional description about the different phases of Embedded Design life Cycle Method.	16	CO1	[K_2]

12.	a)	Describe the CAN protocol bringing out the architecture, message formats and error detection on detail.	8	CO1	[K$_2$]
	b)	Classify ARM processor modes and describe its function.	8	CO3	[K$_2$]
13.	a)	Explain in detail about the frame format and working of I2C Protocol with features.	12	CO1	[K$_2$]
	b)	Differentiate ARM, Thumb, Jazzle mode of ARM processor.	4	CO4	[K$_2$]
14.	a)	With a neat diagram explain the different general-purpose registers of ARM processors.	8	CO5	[K$_2$]
	b)	Categorize ARM Instruction set and explain with a suitable example for arithmetic instruction set.	8	CO4	[K$_2$]
15.	a)	Explain the role of reset circuit and watchdog timer in ARM processor	8	CO2	[K$_2$]
	b)	Describe in detail about profiling and cycle counting.	8	CO2	[K$_2$]
16.		With necessary diagram and ARM C code explain PWM generation technique for 50 % duty cycle.	16	CO4	[K$_3$]

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