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Question Paper Code	12791
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024**

Fourth Semester

**Electronics and Communication Engineering**

(Common to Computer and Communication Engineering)

**20ECPC402 - MICROCONTROLLERS AND EMBEDDED SYSTEMS**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

	Marks	K-Level	CO
1. State the different types of addressing modes of the 8086-instruction set.	2	K1	CO1
2. State the significance of stack.	2	K1	CO1
3. List the features of the 8051 microcontrollers.	2	K1	CO2
4. Recall the different types of Unconditional Jump Instruction.	2	K2	CO2
5. Explain the mode (0 and 1) operation of the timer.	2	K2	CO3
6. Give the priority level of the interrupt sources.	2	K1	CO3
7. List the challenges in embedded computing system design.	2	K1	CO5
8. Enumerate the goals of the design process in embedded computing.	2	K2	CO5
9. Compare the RISC versus CISC architecture.	2	K2	CO6
10. Summarize the several techniques for optimizing the software performance.	2	K2	CO6

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Illustrate the internal hardware architecture of the 8086 microprocessors with a neat diagram.	13	K2	CO1
<b>OR</b>			
b) Explain the interrupts and interrupt service routines of 8086.	13	K2	CO1
12. a) With a neat sketch elucidate the architecture/ functional block diagram of 8051 microcontrollers.	13	K2	CO2
<b>OR</b>			
b) Analyze the different addressing modes of 8051.	13	K2	CO2
13. a) Summarize the features and modes of operation of the Timer 8253.	13	K2	CO3
<b>OR</b>			
b) With a neat sketch illustrates the function of the Keyboard and display controller.	13	K2	CO3

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

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14. a) Design the model train controller with a neat sketch. 13 K2 CO5
- OR**
- b) Illustrate with diagrams about the system design flow methods using waterfall, spiral and successive refinement models. 13 K2 CO5
15. a) Analyze with suitable examples the instruction set of the ARM processor. 13 K2 CO6
- OR**
- b) Examine the architecture and features of the LPC 214X family in detail. 13 K2 CO6
- PART - C (1× 15 = 15 Marks)**
16. a) Draw the block diagram of traffic light control system and write algorithm and ALP. 15 K3 CO4
- OR**
- b) Elaborate on how to interface DAC and ADC with microprocessor. 15 K3 CO4