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Reg. No. :

Question Paper Code : 10078

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Elective

Applied Electronics

AP 4008 – ADVANCED MICROPROCESSORS AND MICROCONTROLLERS ARCHITECTURES

(Regulations 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the need for instruction pipelining?
2. Mention the benefits of having RISC architectures.
3. Write any two salient features of Pentium processor.
4. What is meant by Multitasking?
5. Write the addressing modes of ARM processor.
6. Write the need for thumb instruction.
7. List the various types of timers in MSP430 processor.
8. Write the functions of stack pointer and status register.
9. Mention the timer modes and in PIC controller.
10. What is the role of watch Dog timer?

PART B — (5 × 13 = 65 marks)

11. (a) Explain virtual address mapping using pages with necessary examples and neat sketches.   (13)

Or

    (b) Taking suitable examples, explain how pipelining improves the through put efficiency of a processor without compromising on the latency time.   (13)

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12.   (a)   Draw the architecture of Pentium processor and explain the functional blocks in detail. (13)

Or

     (b)   Briefly explain the advantages of using prefetching and branch prediction features of Pentium processor. (13)

13.   (a)   With neat sketches, explain about the need and functioning of a Memory management unit (MMU). (13)

Or

     (b)   Write an ARM program to find the largest of two 32 bit variables and place the result in another variable. (13)

14.   (a)   Write the addressing modes supported by MSP 430 Microcontroller with examples. (13)

Or

     (b)   Write a brief note on the various orchids peripherals, that are compatible with MSP 430 microcontroller. (13)

15.   (a)   With a neat diagram. Explain in detail about the architecture of PIC microcontroller. (13)

Or

     (b)   Explain in detail about the interrupts and Timers of PIC microcontroller. (13)

PART C — (1 × 15 = 15 marks)

16.   (a)   Explain the I^2C interfacing using PIC. Give the specific function register used and its corresponding waveform. (15)

Or

     (b)   Explain the ADC interfacing using PIC and the register used for the interface. (15)

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