Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 11272

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Fourth Semester

Computer Science and Engineering

CS 2252/141402/CS 42/EC 1257/10144 CS 403/080250010 – MICROPROCESSORS AND MICROCONTROLLERS

(Common to Information Technology)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why are the Program Counter and Stack Pointer are 16-bit registers?
2. What operation can be performed by using the instruction XRA A? Specify the status of Z and CY flag.
3. What address in the interrupt vector table, are used for a Type-2 interrupt in 8086?
4. Why do we use macros?
5. In what ways are the standard microprocessor and co-processor differ from each other?
6. How does the main processor distinguish its instructions from those for the 8087 as it fetches instructions from memory?
7. Why are the port lines of programmable port devices automatically put in the input mode when the device is first powered-up or reset?
8. How to change the direction of the stepper motor from clockwise direction to anticlockwise direction using a program segment.
9. What is the need for de-bouncing the keyboard?
10. What is the use of 'Vref' pin in the ADC?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Give two examples for data transfer instructions, arithmetic instructions, logical instructions and branch instructions of 8085 microprocessor. (8)

(ii) A set of ten current readings is stored in memory locations starting at XX60. The readings are expected to be positive ($<127_{10}$). Write an 8085 assembly language program to check each reading to determine whether it is positive or negative and reject all negative readings and add all positive readings and store it in suitable memory locations. (8)

Or

(b) (i) The following block of data is stored in the memory locations from XX55H to XX5AH. Transfer the data to the locations XX80H to XX85H in the reverse order. Data (H) : 22, A5, B2, 99, 7F, 37. (8)

(ii) Draw the functional block diagram of 8085 microprocessor and explain. (8)

12. (a) (i) Draw the internal architecture of 8086 microprocessor and explain its Bus Interface Unit (BIU). (8)

(ii) Give an example for the 8086 instructions: AAA, CWD, JNBE, LAHF, MOVS, RCL, ROL and SAHF. (8)

Or

(b) (i) What is the use of the following assembler directives: DD, ENDS, EVEN and EXTRN. (8)

(ii) Explain the 8086 Interrupt types with an example. (8)

13. (a) (i) Draw the architecture of 8089 I/O processor and explain the need for 8089 I/O processor. (8)

(ii) Compare Closely Coupled configuration with Loosely coupled configuration. (8)

Or

(b) (i) How is the communication between CPU and IOP being done? (8)

(ii) Draw the internal block diagram of 8087 co-processor and explain. (8)

14. (a) (i) Explain the operating modes of 8253 timer. (8)

(ii) What is DMA? Explain the DMA based data transfer using 8237 DMA controller. (8)

Or

(b) (i) How do you interface a keyboard and the display using keyboard/display controller? (8)

(ii) Explain the parallel communication interface with microprocessor. (8)

15. (a) (i) Explain the internal data memory structure of 8051 microcontroller with its SFRs. (8)

(ii) What is timer/counter? Explain the 16-bit timer mode and 8-bit auto-reload mode of 8051 microcontroller. (8)

Or

(b) (i) How to interface and display an LCD with microcontroller? (8)

(ii) How to transfer data between a PC and microcontroller using serial communication? Draw the necessary diagrams and explain. (8)
