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B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Fourth Semester

Information Technology

IF 250 — MICROPROCESSOR AND MICROCONTROLLER APPLICATIONS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is it necessary to buffer address and data buses of a microprocessor?

2. What is the purpose of READY and TRAP pins of 8085 microprocessor?

3. What are the SFRs associated with Timer operation of 8051 microcontroller?

4. What is the asynchronous data transmission format of 8051 serial port?

5. What are the prefixes available in 8086 processor?

6. Write a program to illustrate the use of the instruction XLAT.

7. What are the different operating modes of 8257 DMA controller?

8. What is the maximum number of key codes that can be generated by 8279?

9. What is meant by embedded control?

10. Compare Analog and Digital filters.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw and explain the timing diagrams for the opcode fetch and memory write operation. (8)

(ii) Explain the functional blocks of 8085 microprocessor with neat diagram. (8)

Or

(b) (i) Explain the instruction format and addressing modes of 8085 processor with example for each type. (8)

(ii) Write an 8085 assembly language program to accomplish the following :

Two eight bit unsigned binary numbers are stored in memory location 2000h and 2001h. The product of these two numbers should be computed using the conventional add/shift method and stored in memory locations 2002H and 2003H. (8)

12. (a) With the help of a neat functional block diagram, explain in detail the architecture and the salient features of 8051 microcontroller. (16)

Or

(b) (i) Describe in detail about the multiple interrupt sources of 8051, clearly indicating the priority wise source groups and their respective vector addresses. (8)

(ii) Explain the polling mechanism to select an interrupt among the pending interrupts in 8051. (8)

13. (a) Explain the maximum mode operation of 8086 microprocessor with necessary diagram. (16)

Or

(b) (i) Draw the structure of 8086 flag register and explain the function of the flags with examples. (8)

(ii) Write a program using 8086 instructions to move a block of data from one memory location to another with overlapping memory space and without overlapping memory space. (8)

14. (a) Explain how the programmable interrupt controller is used with a microprocessor to handle 32 interrupt requests. (16)

Or

(b) Discuss in detail the interfacing of a 4-digit multiplexed seven segment display using a 8085A microprocessor system with the help of neat diagram. Write an 8085 A assembly language program to display a given four digit number. (16)

15. (a) Explain with block diagram how optical motor shaft encoders are used to measure and control the speed of a dc motor in a microcontroller based system. (16)

Or

(b) With neat diagrams explain a microprocessor based temperature control system. (16)
