

O.C.

E 8228

M.C.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Third Semester

CA 231 — MICROPROCESSOR AND ITS APPLICATIONS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What advantages does a microprocessor have over a microcontroller?
2. Why the RISC processors are always faster?
3. What functions are performed by the RET instruction?
4. What are the contents of the DX, AX and CL register after executing the following program fragment?

0100: MOV AX, 0909
0105: MOV CL, 08
0109: AAD
010A: DIV CL
5. How an 8086 microprocessor does reads lower or higher byte or a complete word from the memory?
6. When does the 8086 reset? Where from its starts executing after reset?
7. If the instruction INT 40h is to pass control to a subroutine at address A0100h in the code segment starting at address A000h, what vector should be loaded into the interrupt vector table and at which location?
8. List the steps undertaken for I/O data transfer between I/O devices and CPU via interfaces with handshake signals. Draw the diagram representing this handshake between I/O and CPU via the interfaces.
9. What is virtual memory? How much virtual memory can an 80286 address? How much physical memory can an 80286 address?
10. What do you mean by superscalar architecture?

PART B — (5 × 16 = 80 marks)

11. (i) Explain the internal architecture of 8086 with a neat diagram. (9)
- (ii) Write an 8086 ALP to sort the four nibbles of the AX register in ascending order. (7)
12. (a) (i) What is the maximum memory addressing possible with 8085 microprocessor? Explain the multiplexing in 8085 design. (7)
- (ii) Give a brief note on any one application of microprocessors. (6)
- (iii) What are the limitations of 8-bit microprocessor? (3)

Or

- (b) (i) Why is it a Co-processor needed? What are the co-processors available for the Intel family of microprocessors? (7)
- (ii) How does 8086 differentiate the 8087's instruction from its own instructions? Also explain how 8086 and 8087 manage to work with shared buses and memory? (9)
13. (a) (i) Explain any five addressing modes available in 8086 with an example for each. (10)
- (ii) What do you mean by an Interrupt and interrupt vector table (IVT)? Explain how interrupts are handled in 8086? (6)

Or

- (b) (i) List and explain the two different modes of operation of 8086? (4)
- (ii) Describe in detail the unique min/max mode signals of 8086. (8)
- (iii) List out the differences between 8086 and 8088. (4)
14. (a) (i) Describe the working of Programmable timer circuits. (8)
- (ii) With a neat diagram explain the 8279 programmable keyboard/display controller. (8)

Or

- (b) (i) What is the use of DMA? What is the status of the CPU during DMA? (4)
- (ii) With a neat diagram explain the working of a DMA controller? (12)

15. (a) (i) What is the difference between real mode and protected mode operation? (4)
- (ii) Describe the architectural design of 80286 microprocessor. (12)

Or

- (b) (i) With a neat diagram explain the architecture of PENTIUM processor. (10)
- (ii) Explain the three modes of operation of PENTIUM microprocessor. (6)
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