G 1415 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2012

Fourth Semester

Branch : Computer Science and Engineering

ADVANCED MICROPROCESSORS AND PERIPHERALS (R)

(Improvement/Supplementary—2004 admission onwards)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions briefly.*
Each question carries 4 *marks.*

1. Explain the status word format of 8279.
2. Explain bit set-reset mode in 8255.
3. What are the different keyboard modes of operation of 8279 keyboard/display controller ? Explain.
4. Explain the memories in a microcontroller.
5. List any *four* data types processed directly by 8088.
6. List all the addressing modes available in 8088.
7. Name the six groups of instructions in the 8086 instruction set.
8. During a bus cycle that involves an odd-addressed word transfer which byte of data is transferred over the bus during the first bus cycle.
9. How many bytes are there in a descriptor ? Name each of its fields and give their sizes.
10. What four types of SIMD data can be processed by the Pentium processor with MMX technology.

(10 × 4 = 40 marks)

Part B

Answer any **one** *full question from each module.*
Each full question carries 12 *marks.*

Module 1

11. Explain the internal architecture of 8255. Describe the mode 2 operation with port A as bidirectional bus and port B in mode 1 of 8255 using its control word, control signals, timing diagram and status word.

Or

12. Explain the block schematic internal functional blocks of 8251. Explain the sequence of instructions to be used for the initialisation of 8251 in serial asynchronous mode transmission of a byte stored in some general purpose register of 8085.

Turn over

Module 2

13. With neat diagram, explain how a 4 × 4 keyboard can be interfaced with 8085 using 8255 ? Give the control words used in the above design.

Or

14. Draw the internal architecture of any one general purpose microcontroller, emphasising the differences as compared to a microprocessor.

Module 3

15. Give an overview of how a byte of data is read from memory address B0004 of an 8088 based microcomputer, and list the memory control signals along with their active logic levels that occur during the memory read cycle.

Or

16. (a) Explain with suitable examples, the stack memory addressing modes. (6 marks)

(b) Explain any *four* data related addressing modes with appropriate examples. (6 marks)

Module 4

17. (a) Write a 8086 assembly language program to sort a byte array in ascending order using bubble sort.

(6 marks)

(b) Given a number N in the range $0 < N \leq 5$. Write an assembly language program that computes its factorial and saves the result in memory location FACT.

(6 marks)

Or

18. (a) Explain the real mode interrupt address pointer table and protected mode address pointer table of 80286.

(6 marks)

(b) Describe the bus activity that take place as the 80286 writes a byte of data into the memory address B0011.

(6 marks)

Module 5

19. Draw a neat block functional diagrams of the internl architecture of Pentium processor and explain its important features.

Or

20. (a) How is memory organized from a hardware point of view in a protected-mode and in a real mode 80386 microcomputer system ?

(8 marks)

(b) Explain the real mode internal interrupts serviced by 80386. (4 marks)

[5 × 12 = 60 marks]