C 37072   (Pages : 2)   Name.................................

Reg. No................................

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2004

CS/IT 2K 406/PTCS 2K 405. HARDWARE SYSTEMS DESIGN

(New Scheme)

Time : Three Hours   Maximum : 100 Marks

*Answer **all** the questions.*

1. (a) How is a parallel interface useful ? Explain.

   (b) What is BIOS ? Explain.

   (c) (i) What register is used to enable the paging mechanism in the 80386, 80486, Pentium and Pentium pro-microprocessors ?

   (2 marks)

   (ii) How many 32 bit addresses are stored in the page directory ?   (3 marks)

   (d) (i) How many bytes are stored on the stack by the PUSH instruction ?   (2 marks)

   (ii) Which instruction places the EFLAGs on the stack in the Pentium microprocessor ?

   (3 marks)

   (e) Explain the working of a 74LS138 chip.

   (f) Explain how the read back control word functions in the 8254.

   (g) Develop a circuit that places interrupt type number 86H on the data bus in response to the INTR interrupt input.

   (h) Describe how the ISA connector is modified to accommodate the EISA interface.

   [8 × 5 = 40 marks]

2. (a) Briefly explain the salient features of a Pentium processor.

   Or

   (b) Discuss in detail about the bus buffering and latching techniques in 8086/88 processor.

   (15 marks)

3. (a) With examples, explain the different Register addressing modes in 80386 processor.

   (15 marks)

   Or

   (b) (i) Write a procedure that sums EAX, EBX, ECX and EDX. If a carry occurs, place a logic 1 in EDI. If no carry occurs, place a logic and in EDI. The sum should be found in EAX, after the execution of your procedure.

   (8 marks)

   (ii) Write a program that reads any decimal number between 0 and 65,535 and displays the 16 bit binary version on the video display.

   (7 marks)

Turn over

4. (a) Discuss in detail about the 16 bit memory interface.

Or

  (b) With a neat block diagram, explain the working of a 16550 programmable communication interface chip.

(15 marks)

5. (a) With a neat block diagram, explain the working of a DMAC.   (15 marks)

Or

  (b) (i) What is a shared bus ? Why is it required ?   (4 marks)

    (ii) With a neat block diagram, explain the working of a bus arbiter.   (11 marks)

[4 × 15 = 60 marks]