C 6342 (4)

(Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2005

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

(New Scheme)

Time : Three Hours Maximum : 100 Marks

Answer **all** *the questions.*

1. (a) Differentiate between a serial interface and a parallel interface.

   (b) With an appropriate diagram, explain the working of a clock generator.

   (c) Code a descriptor that describes a memory segment that begins at location O3OOOOOOH and ends at location O5FFFFFFH. This memory segment is a data segment that grows upward in the memory system and can be written. The descriptor is for an 80386 microprocessor.

   (d) What is the difference between an intersegment jump and an intrasegment jump ?

   (e) With a diagram, explain the address, data and control connections of a pseudo memory component.

   (f) Program the 16550 for operation using six data bits, even parity, one stop bit, and a band rate of 19,200 using a 18·432 MHz clock. Assume that the I/O ports are numbered 20 H and 22 H.

   (g) Explain why pull-up resistors on D_0–D_7 cause the microprocessor to respond with interrupt vector type number FFH for the $\overline{INTA}$ pulse.

   (h) Draw the timing diagram generated to write a 1001010000 using MFM encoding.

(8 × 5 = 40 marks)

2. (a) What is a LAN ? How is it useful ? What are its different topologies ? Explain the working of each.

(15 marks)

Or

   (b) (i) Explain the minimum mode of operation of an 8086/88 microprocessor. (8 marks)

   (ii) With a diagram, explain the 8086/88. Write bus cycle. (7 marks)

3. (a) Briefly explain the real mode memory addressing in an 80286 processor.

Or

   (b) What are the types of program memory addressing ? Explain with examples.

(15 marks)

4. (a) With an appropriate diagram, explain the working of a DRAM. (15 marks)

Or

   (b) (i) Differentiate between a memory mapped I/O and an I/O mapped I/O. (4 marks)

   (ii) What are the functions of an I/O interface ? (4 marks)

   (iii) Explain how decoding of an 8 bit I/O address is done. (7 marks)

Turn over

5. (a) Comment on the issues related to expanding the interrupt structure. (15 marks)

Or

(b) Write short notes on :

(i) Video displays. (7 marks)

(ii) ISA Bus. (8 marks)

[4 × 15 = 60 marks]