2008

M.Sc.

3rd Semester Examination

ELECTRONICS

PAPER—EL-2101

Full Marks : 50

Time : 2 hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *Q. No. 1* and any *three* questions from the rest.

1. a) How many memory location can be addressed by a microprocessor with 14 address lines ?

    b) Explain : why are the program counter and the stack pointer 16-bit registers ?

c) Explain the need to demultiplex the bus $AD_7 - AD_0$.

d) Determine the control word for the following configuration of the ports of Intel 8255 :

Port A → Input. Mode of Port A → Mode 1

Port B → Output. Mode of Port B → Mode 0

Port C_{lower} ($PC_0 - PC_2$) → Input

e) What are the control signals necessary in the memory mapped I/O ? 2×5

2. a) What is the function of the accumulator of a 8085 μp.?

b) Write a single byte instruction that will make the content of an accumulator zero.

c) Write an assembly language program that will multiply two eight-bit numbers using repeated addition method. 2+2+6

3. a) Write an assembly language program that will convert a BCD number to a binary number.

b) Briefly describe Opcode-fetch cycle and show the associated wave forms. 5+(3+2)

4. a) Indicate different data transfer schemes of 8085 μp.

   b) Show the differences between synchronous and asynchronous data transfer schemes.

   c) Discuss different Interrupts present in 8085 μp.

   d) What do you mean by device polling?

   e) What is vectored interrupt? 1+2+3+2+2

5. a) What is DMA?

   b) Indicate the function of HOLD and HLDA pins of 8085 μp.

   c) Explain how the 8237 DMA controller transfers 64K bytes of data per channel with eight address lines.

   d) Explain How 8237 DMA controller can be used both in Master mode and Slave mode. 1+2+3+4

6. a) Specify the handshake signals and their functions if port A of the 8255A is set up as an output port in Mode 1.

   b) Write down the two control words that are necessary to set the bit PC_6. (Assume that other ports are not being used.)

c) Find out the address of Port A, B, C and CWR using the following figure and also write a BSR control word subroutine to set PC_7 and reset it after 10 msec. (Assume that delay subroutine is available.)

2+2+(2+4)
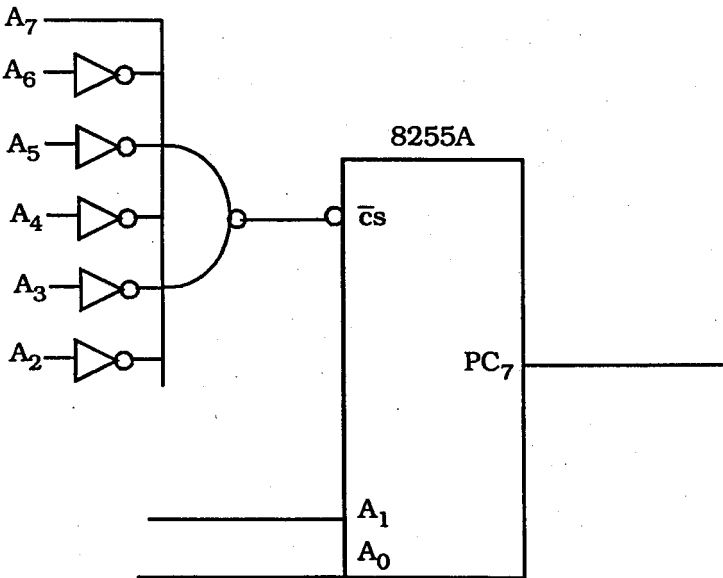
Ref. Fig. No. 6.c)

Internal Assessment — 10