[06 – 3112]

III/IV B.E. DEGREE EXAMINATION.

First Semester

Electrical and Electronics Engineering

Elective II – LOGIC DESIGN AND MICROPROCESSORS

(Effective from the admitted batch of 2006–2007)

Time : Three hours Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

1. (a) Find the value of x and y, given that
   (i) $(16)_{10} = (100)_x$
   (ii) $(292)_{10} = (1204)_y$

   (b) List the truth tables of NAND and NOR gate.

   (c) Define prime implicant and essential implicant.

   (d) What is the function of READY signal of 8085 microprocessor?

   (e) Distinguish between ROM and RAM.

(f) Specify the crystal frequency required for an 8085 system to operate at 1 MHz.

(g) What is edge triggering and its importance?

2. (a) Determine minimal expression of the following function using Boolean Algebra.

$F(A,B,C,D) = A'C'+ABD + BC'D + AB'D' + ABCD'$

(b) Use a Karnaugh map to find the minimal SOP for the following expression :

$F = A'B'C' + A'B'C + AB'C$.

3. (a) Convert each pair of decimal numbers to binary and add using the 2's complement form.

(i) + 56 and – 27

(ii) – 46 and 25

(iii) 33 and 15.

(b) Distinguish between sequential and combinational circuits.

4. (a) What is Race ground condition in flip flops? Explain how it can be eliminated using master slave JK flip-flop.

(b) Differentiate between synchronous and ripple counter.

5. (a) Discuss various modes of operation of 8255.

(b) Draw the block diagram of 8279 and explain its operation.

6. (a) Explain the functional aspects of 8255 PPI with the help of a neat block schematic diagram.

(b) Draw the block schematic of 8253 timer and explain its functional aspects.

7. (a) Explain the successive approximation type A to D converter and write its advantages over others.

(b) Define :

(i) Resolution

(ii) Accuracy

(iii) Linearity with respect to DAC.

8. (a) Draw and explain the internal architecture of 8085.

(b) Distinguish between PROM and EPROM. Explain briefly their READ, WRITE and ERASING operations.
