M.Sc. Semester—I (CBCS Scheme) Examination
COMPUTER SCIENCE
(Digital System and Microprocessor)
Paper–1MCS1

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) Assume suitable data wherever necessary.
(2) Illustrate your answers with the help of neat sketches.

1. (a) Explain the representation of floating point numbers in the memory with the help of example. 7

   (b) Reduce and design following using k-map :

   f (A, B, C, D) = Σ (0, 2, 5, 7, 8, 10, 13, 15) 6

OR

2. (a) State and prove laws of equality. 6

   (b) Design x.y + x (y + z) + y (y + z) and simplify using boolean algebra technique and redesign circuit. 7

3. (a) Compare MOS and CMOS with respect to fan in, fan out and noise margin. 6

   (b) Explain the working of 8 : 1 MUX with logical diagram and truth table. Give its applications. 7

OR

4. (a) Give the comparison between TTL and ECL with respect to fan-in, fan out and noise margin. 6

   (b) What is Decoder ? Explain the working of 3 : 8 decoder with logical diagram and truth table. 7

5. (a) Explain the function of ALU IC 74181 with the help of suitable example. 7

   (b) Explain the working of half subtractor with truth table. 6

OR

6. (a) Explain the working of parallel binary adder with logical diagram. 7

   (b) How to use adder as subtractor ? Explain it with diagram. 6

7. (a) Design clocked RSFF using NAND or NOR only and explain its working with truth table. 7

   (b) Design 3-bit ring counter and explain its working. 6

OR

8. (a) Design JK FF and explain its working. 6

(b) Describe shift registers, its types. State its applications. 7

9. (a) Draw architecture of 8086 µp and explain it. 8

(b) Describe memory segmentation in 8086. 6

OR

10. (a) Draw pinout diagram of 8086 µp. Explain it. 8

(b) Explain the concept of pipelining in 8086 µp. 2

(c) What is flag register ? Enlist various flags in 8086. 4

11. (a) Describe interrupts in 8086. 8

(b) Differentiate between memory mapped I/O and I/O mapped I/O. 3

(c) Explain the concept of address mapping for 8086. 3

OR

12. (a) Describe stack structure for 8086. 6

(b) Explain software interrupt with the help of IVT. 4

(c) Explain the concept of memory bank in 8086 µp. 4