

- Note: 1. All questions are compulsory.
2. Figure should be neat and labeled.
3. Write side indicates full marks.

Q.1 Attempt any 2 from the following. (10 M)

1. Solve the following.
 - I. $(4567)_8 = (?)_2$
 - II. $(101101101111)_2 = (?)_8$
2. Solve the following.
 - I. $(111001)_2 * (111)_2 = (?)_2$
 - II. $(111010)_2 / (1001)_2 = (?)_2$
3. Represent the following number in signed magnitude, BCD, Excess-3, Gray code.
 - I. $(125)_{10}$
 - II. $(234)_{10}$
4. Solve the following using 2's complement method.
 - I. $(4 - 10)_{10}$

Q.2 Attempt any 2 from the following. (10 M)

1. Construct basic gates using NOR gates.
2. Explain De'Morgans 2'nd law.
3. Write short note on Gates.
4. Realize the equation, draw the K-Map & circuit diagram by using SOP method.
 $F(A,B,C,D) = \sum M(0,1,2,3,8,9,10,11,12,13)$

Q.3 Attempt any 2 from the following. (10 M)

1. Write short note on half Adder.
2. Explain encoder.
3. Write short note on full Subtractor.
4. Draw 16:1 multiplexer for the following.
 $Y = \sum m(1, 2, 5, 7, 9, 11, 13)$

Q.4 Attempt any 2 from the following. (10 M)

1. Write short note on D-type and T-type Flip-Flop.
2. Explain S-R Flip-Flop.
3. Write short note on Shift Registers.
4. Write short note on Counters.

Q.5 Attempt any 2 from the following. (10 M)

1. Write short note on Basic Organization of Computers.
2. Write short note on Memory.
3. Write short note on Secondary Memory. (Hard Disk & Optical disk)
4. Write short note on Cache Memory.

Q.6 Attempt any 2 from the following.

(10 M)

1. Write short note on Real Time Operating System.
2. Write short note on Linux Operating System.
3. Write short note on Windows OS.
4. Write short note on Multi User/Multitasking Operating System.

Q.7 Attempt any 3 from the following.

(15 M)

1. Solve the following.
 - I. $(1011)_2 * (111)_2 = (?)_2$
 - II. $(11001)_2 / (101)_2 = (?)_2$
2. Write short note on XOR gate.
3. Write short note on Binary to Gray Code Converter.
4. Explain J-K Flip-Flop.
5. Write short note on Hard Disk.
6. Write short note on I/O Devices.