DECEMBER 2014

P/ID 17454/ RCD/PCAG

Time : Three hours Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

1. (a) Convert the following:

(i) $(0.6875)_{10} = (?)_2$

(ii) $(673.124)_8 = (?)_2$

(iii) $(306.D)_{16} = (?)_2$.

Or

(b) Use 2's complement to perform M — N with the given binary numbers.

(i) 1010100 – 1000100

(ii) 1000100 – 1010100.

2. (a) Draw the circuit of full-Subtractor and explain.

Or

(b) Explain the operation of a multiplexer with its function table.

3. (a) Draw the logic diagram of D filp-flop and explain its working principle.

Or

(b) Explain the sequential circuit that uses a register.

4. (a) Write short notes on scratchpad memory.

Or

(b) Write short notes on the design of arithmetic circuit.

5. (a) Explain briefly the design of the Hard-wired control.

Or

(b) Write short notes on microprogram control.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

6. Simplify the Boolean function using K-Map method $F(w,x,y,z) = \sum (0,1,2,4,5,6,8,9,12,13,14)$.

7. Discuss on various logic gates with their truth tables.

8. Explain the multilevel NAND circuits.

9. Describe a four bit ripple counter and its working procedure with a neat circuit and Timing diagram.

10. Explain the JK flip-flop with a neat diagram.

11. Discuss on the status register in detail.

12. Draw the block diagram of digital computer and explain the various registers.

13. Explain memory-reference instructions with examples.
