SN – 449

I Semester B.C.A. Degree Examination, November/December 2014
(Y2K14 – CBCS Scheme)
Computer Science
BCA 104 T : DIGITAL ELECTRONICS

Time : 3 Hours Max. Marks : 70

Instruction : *Answer* ***all*** *Sections.*

SECTION – A

Answer **any ten** questions. **(2×10=20)**

1. Define the terms short circuit and open circuit.
2. What are the different types of network ports ?
3. What is a semiconductor ? Give example.
4. How are solids classified ?
5. Convert B64.53 to binary.
6. Define minterm and maxterm.
7. Simplify the following Boolean expressions $\overline{(A+\bar{B})+CD}$
8. What is an X-OR gate ? Give the truth table and logic symbol of X-OR gate.
9. What is a combinational circuit ? Give example.
10. What is an adder ? Give the logic diagram of half adder circuit.
11. Mention the two applications of D Flip-flop.
12. Define the terms propagation delay and hold time.

SECTION – B

Answer **any 5** questions. **(10×5=50)**

1. a) State and explain Superposition theorem. **5**

   b) What is series parallel circuit ? Explain. **5**

P.T.O.

2. a) Explain P-N junction with a neat diagram. 5

   b) Write a note on extrinsic semiconductors. 5

3. a) Explain the characteristics features of IC family gates. 5

   b) State and prove De-Morgan's theorems. 5

4. a) Convert the following : 6

   i) $(453.26)_{10} = (\quad)_2, (\quad)_8$.

   ii) $(1101.110)_2 = (\quad)_8, (\quad)_{16}$

   b) Simplify the following into POS using K-Map

   $F(A\ B\ C\ D) = \Sigma(0, 2, 3, 5, 11, 13) + \Sigma D(1, 7, 10)$. 4

5. a) Prove NAND and NOR gates as universal gates. 6

   b) With a logic diagram explain decimal to BCD encoder. 4

6. a) Write a note on parity checker and parity generator. 5

   b) With a neat diagram explain 4-bit parallel binary adder. 5

7. a) Explain the working of J-K flip-flop with a neat diagram. 5

   b) Differentiate between a latch and a flip-flop. 5

8. a) Explain SISO shift register with a diagram. 5

   b) Write a note on applications of shift registers. 5
