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BIEL-030

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DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)/ ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRONICS AND COMMUNICATION ENGINEERING (ACECVI)

Term-End Examination

December, 2011

BIEL-030 : Digital Electronics

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions and each carry **equal** marks. Question no. **one** is **compulsory** (objective). Give the exact answer of each question.*

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1. Attempt *All* objectives questions. **7x2=14**

(a) 9^s complement of the 2368 is :

(i) 6823 (ii) 3682

(iii) 7163 (iv) 7631

(b) TTL logic family is :

(i) Bipolar (ii) Unipolar

(iii) Tripolar (iv) None

(c) Flip - Flop is a :

(i) 1 bit storage device

(ii) 2 bit storage device .

(iii) 3 bit storage device.

(iv) None of them.

(d) A full adder can be made out of :

(i) Three half adder

(ii) Two half adder

(iii) Two half adder and or gate

(iv) Two half adder and an AND gate.

(e) Boolean alzebra is essentially based on :

(i) Symbols (ii) Logic

(iii) Truth (iv) None.

(f) According to boolean alzebra $(A + \overline{A})$ equals.

(i) A (ii) 1

(iii) 0 (iv) $A\overline{A}$

(g) ECL stand for :

(i) Emitter coupled logic.

(ii) End coupled logic

(iii) EX-OR logic

(iv) None of them.

2. (a) Construct a logic circuit using basic gates. For the following expressions. **7x2=14**

(i) $x = \overline{AB(C + D)}$

(ii) $x = \overline{(A+B\,\overline{C}\,D\,\overline{E})} + \overline{B}\,C\,\overline{D}$

(b) Draw and explain the truth table and ckt for J-K Flip - Flop.

3. (a) What is a counter ? How it broadly classified ? Write at least two lines on each such classification. **7x2=14**

(b) With proper ckt Diagram explain the operation of Dual slope A/D converter.

4. (a) Explain the ECL logic family and give their characteristics. **7x2=14**

(b) Solve the following Using K-MAP.

(i) $Y = \Sigma m\ (0,1,3,5,7,9,10,13)$

(ii) $Y = \Sigma m\ \ (2,3,6,8,9,11,14,15)$

5. (a) With the suitable ckt - diagram. Explain how a four bit binary full adder works ? **7x2=14**

(b) Explain the operation of a BCD to decimal Decoder ckt.

6. (a) Solve the following **7x2=14**

(i) Add $(3296.32)_{12} + (9326.82)_{12}$ without changing base.

(ii) Substruct the following usings 2^s complement.

(A) $(1010)_2 - (0111)_2$

(B) $(11011)_2 - (011011)_2$

(iii) $(3258)_{10} - (9368)_{10}$ using 10^s complement.

(b) Draw the ckt Diagram of CMOS Inverter and explain it's operation.

7. Write short notes on *any two :* **7x2=14**

(a) RAM & PROM

(b) Seven Segment Display System

(c) Shift Register.
