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BIELE-012

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2015

BIELE-012 : ELECTRONIC SWITCHING CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Any missing data may be suitably assumed. Use of scientific calculator is permitted.*

1. (a) Write down the various steps for the conversion of one type of flip-flop into another type of flip-flop. *5*

(b) Define shift registers. Draw and explain the operation of SIPO shift register. *5*

2. (a) Explain the operation of any one type of A-to-D converter circuit. *5*

(b) Why is Master-Slave J-K flip-flop better than S-R flip-flop ? *5*

3. By using suitable flip-flop, construct a synchronous counter for counting the sequence $0 \rightarrow 2 \rightarrow 4 \rightarrow 6 \rightarrow 7 \rightarrow 0$. Avoid the lockout condition. *10*

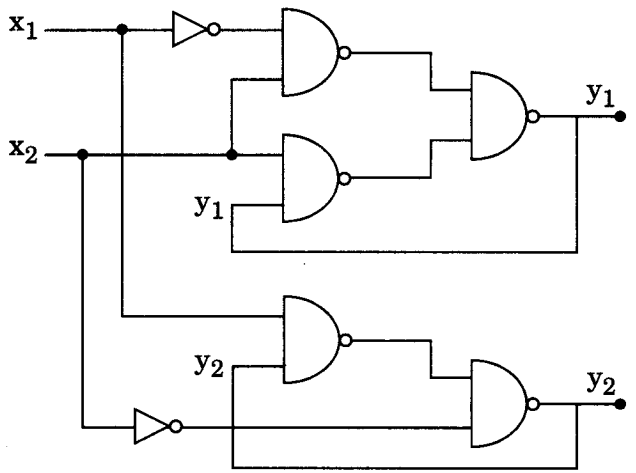
4. (a) Differentiate between Mealy and Moore model with a suitable diagram. *5*

(b) Write down the limitations of finite state machines. *5*

5. (a) Compare synchronous and asynchronous sequential circuits. *5*

(b) What do you mean by GLITCH and propagation delay in asynchronous counters ? *5*

6. Derive the flow table for the given sequential circuit : *10*



7. Differentiate among Dynamic, Static and Essential hazards with suitable examples. *10*

8. Explain how spikes in the combinational circuits affect the operation of the circuit. Draw the hazard-free realization for the following Boolean function : *3+7*

$$f(A, B, C, D) = \sum m(0, 2, 6, 7, 8, 10, 12)$$

9. Derive the equations for the characteristic impedance of symmetrical T and π-networks. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Properties of Symmetric Functions

(b) Fundamental Mode Circuits

(c) Sequence Generator