00198

No. of Printed Pages : 2

BIELE-011

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

Term-End Examination

December, 2015

BIELE-011 : DIGITAL SYSTEM DESIGN

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks.*

1. Implement the truth table of a binary full subtractor using 4 : 1 MUX. Is MUX a programmable device ? Justify your answer. *10*

2. Design a 3-bit binary Up-Down counter using J-K flip-flop. Explain its operation. *10*

3. What are the various controller design principles ? Discuss their time and frequency considerations. *10*

4. Design an asynchronous machine which changes its state in the sequence $2 \rightarrow 4 \rightarrow 7 \rightarrow 9 \rightarrow 13 \rightarrow 15$ and repeats, when input $X = 1$. *10*

5. How can a ROM be used for implementing the truth table of BCD to EX-3 code converter ? *10*

6. Write down the truth table and VHDL code for a 3-bit up/down counter. Also draw the circuit and output waveforms. *10*

7. What is micro-programmed control unit ? Explain the working of a programmable controller with a block diagram. *10*

8. (a) Draw a block diagram for PLA control logic and explain its working.

   (b) What is the role of ROM and PROM in micro-program control logic ? *5+5*

9. Discuss an example of the use of multiplexer in system controller. Draw the block diagram. *10*

10. Discuss the design of asynchronous machine. What are cycle and races in asynchronous circuits ? How can they be avoided ? *10*