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BIEL-030

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

00663

Term-End Examination

December, 2016

BIEL-030 : DIGITAL ELECTRONICS

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Question no. **1** is **compulsory**. Use of scientific calculator is allowed.*

1. Choose the best answer for the following : *7×2=14*

(a) Convert the decimal number 221 to binary number :

(i) 10111011

(ii) 11011101

(iii) 10111101

(iv) 10111100

(b) Assign the proper odd parity bit to the code 111001.

(i) 1111011

(ii) 1111001

(iii) 0111111

(iv) 0011111

(c) Which of the following logic families has the shortest propagation delay ?

(i) CMOS

(ii) BiCMOS

(iii) ECL

(iv) TTL

(d) What is the another name for a one-shot ?

(i) Monostable

(ii) Bistable

(iii) Astable

(iv) Multivibrator

(e) The output of an OR gate with three inputs, A, B and C is low, when _____ .

(i) A = 0, B = 0, C = 0

(ii) A = 0, B = 0, C = 1

(iii) A = 0, B = 1, C = 1

(iv) None of the above

(f) How many flip-flops are required to make a MOD-32 binary counter ?

(i) 1

(ii) 4

(iii) 6

(iv) 8

(g) A hexadecimal system has

(i) 4 bits

(ii) 8 bits

(iii) 8 bytes

(iv) None of the above

2. What is meant by TTL ? With a neat diagram, explain the operation of open collector output configuration. *14*

3. Design a JK flip-flop using NOR gates and explain its operation. *14*

4. Implement the expression

$$Y(A, B, C) = \Pi M(0, 2, 4, 5, 6)$$

using only NOR-NOR logic. *14*

5. (a) Explain the working of carry look-ahead adder. *10*

(b) Draw the circuit diagram of a 3-bit Ring counter. *4*

6. (a) Given the two binary numbers X = 1010100 and Y = 1000011. Perform the subtraction X – Y using 1's complement method. 7

(b) Bring out the differences between (i) encoder and multiplexer, and (ii) combination and sequential logic circuits. 7

7. Write short notes on any ***two*** of the following : *2×7=14*

(a) Realization of PMOS Inverter

(b) Shift Register

(c) De Morgan's Theorems