Printed Pages – 4 Roll No. : .....

B024314(024)

B. Tech. (Third Semester) Examination, Nov.-Dec. 2021

A) CTE (~~New~~ Scheme)

DIGITAL ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question.*

Unit-I

1. (a) What is Parity bit? Explain. 4

   (b) (i) Convert gray code 101011 into its binary equivalent. 2

(ii) Convert $(85{\cdot}63)_{10}$ to binary. 2

(iii) Convert $(2AC5{\cdot}D)_{16}$ to decimal. 2

(iv) Convert $(475{\cdot}25)_{8}$ to decimal. 2

(c) What is the simplified form of the Boolean expression?

(i) $ABC' + ABC + A'BC + A'BC'$ 2

(ii) $(A' + B)(A + B)$ 2

(iii) $X = B + A{\cdot}B' + A{\cdot}B$ 2

(iv) $(125)_R = (203)_S$, find out the value of radix R. 2

(d) The message below has been coded in the even parity humming code transmitted through a noise channel. Code the message assuming that it must have a single error occurred in each word code. (0111001) 8

Unit-II

2. (a) Distinguish between sum-of-products and product-of-sums. 4

(b) Implement the following function with a Multiplexer. 8

$$F(A, B, C, D) = \sum(0, 1, 3, 4, 8, 9, 15)$$

(c) Simplify the expression given below using K map. 8

$$Y = \sum m(0, 1, 5, 9, 13, 14, 15) + d(3, 4, 7, 10, 11)$$

(d) Determine the prime - implicates of the function. 8

$$F(W, X, Y, Z) = \sum(1, 4, 6, 7, 8, 9, 10, 11, 15)$$

Unit-III

3. (a) What is basic function flip-flop? 4

(b) Convert T FLIP-FLOP to D FLIP-FLOP. 8

(c) Explain JK flip-flop with suitable logic diagram, & explain its operation. 8

(d) Explain right counter & also explain synchronous counters. 8

Unit-IV

4. (a) Explain digital to analog converter. With suitable example. 4

(b) Explain weighted resistor/converter. 8

(c) Describe A/D converter with example. 8

(d) Explain R-2R Ladder D/A converter. 8

Unit-V

5. (a) Explain memory organization. 4

(b) What is programmable logic array? How it differs from ROM? 8

(c) Explain classification and characteristics of memories with example. 8

(d) Explain ROM & also explain types of ROM. 8