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nester III (B.Tech.)

Er. No. 2018308

Academic Year: 2021-22

Jaypee University of Engineering & Technology, Guna

T-1 (Odd Semester 2021)

18B11EC311- Digital Systems and Microprocessor/
14B11EC317 – Digital Electronics

11½

Maximum duration: 1 Hour

Maximum Marks: 15

Notes:

1. This question paper has five questions.
2. Write relevant answers only in proper order.
3. Do not write anything on question paper.

Q1. Solve the following: — 3 **[03]**

(i) $(11.0111)_2 = (\quad)_{10}$
(ii) $(274.1875)_{10} = (\quad)_2$
(iii) $(6800)_{10} = (\quad)_8$
(iv) Subtract $(101.110)_2$ from $(110.001)_2$
(v) Multiply $(1.01)_2$ with $(10.1)_2$
(vi) $(A365F)_{16} = (\quad)_8$

Q2. (a) Subtract 01100.00 from 11011.00 using 2's complement. — 1? **[1.5]**

(b) Divide $(6573)_8$ by $(16)_8$ — X — 0 **[1.5]**

Q3. (a) (i) Convert Gray code 1101010110 into binary. — X 0 **[01]**

(ii) Convert binary code 10101111001 into gray code. — ½

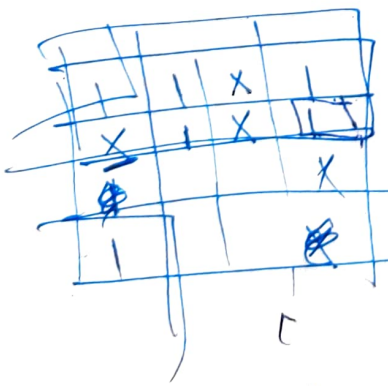
(b) Perform BCD addition of $(647)_{10}$ and $(482)_{10}$. **[02]**

Q4. What are universal gates? Realize all logic gates using NAND gate only. — 2½ **[03]**

Q5. Minimize the following function using K-Map and implement the reduced expression using simple logic gates. **[03]**

2½

$F(A,B,C,D) = \Sigma m(0, 1, 2, 5, 6, 8) + d(3, 4, 7, 14)$



2|100
2|51
2|20
1

8 × 6 = 48

4 × 64 + 7 × 8 + 7

1536
384