Total No. of printed pages = 3

EI/IT/Co-403/DE/4th Sem/2017/M

DIGITAL ELECTRONICS

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No.1 and any *four* from the rest.

1. Answer the following as directed : 1×10=10

(a) $584{\cdot}21 = (\ )_2$

(b) 12 = ( ) excess –3 code

(c) $(01110101_2) =$ ( ) gray code

(d) (110010) = ( ) one's complement

(e) FFFFH = $(\ )_2$

(f) $(1011{\cdot}101)_2 + ({\cdot}101)_2 = (\ )_2$

(g) $(2479)_{10} = (\ )_{16}$

(h) $(355)_8 = (\ )_2$

(i) $(1011{\cdot}011)_2 = (\ )_{10}$

(j) $(435)_{10} = (\ )_8$

[Turn over

2. (a) What do you mean by universal gate ? How can you show the three operations NOT, AND, OR with the help of universal gate ? 8

(b) State Duality theorem with example. 4

(c) Find the dual of the following : 3

$\overline{AB} = \bar{A} + \bar{B}$

3. (a) Using the truth table, show that the Boolean expression $A + \bar{A}B = A + B$ 4

(b) Using Boolean algebra, simplify the Boolean expression : 4

$Z = \overline{AB + AC} + \overline{ABC}$

(c) Draw a Karnaugh Map for the following function of four variable and use it to reduce the function : 7

$F(P, Q, R, S) = \sum m\,(0,1,4,5,3,2,11,10)$

4. (a) What do you mean by Half Adder and Full Adder ? Explain half and full Adder giving logic gates and truth table. 10

(b) Compare MOS circuit and TTL circuit. 5

5. (a) What is flip flop ? Draw the circuit diagram and logic symbols for J-K flip flop and give the truth table. 2+8=10

(b) Draw the circuit for TTL NAND gate and explain its operation briefly. 5

6. Write short notes on any *two* : 7½×2=15

(i) ASCII code

(ii) Seven segment display

(iii) Master-slave J-K flip flop

(iv) Full subtractor

(v) Digital comparator.