

Total No. of printed pages = 4

Et/Co/It-403/DE/4th Sem/2017/N

DIGITAL ELECTRONICS

Full Marks – 70

Time – Three hours

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

Answer Q. No. 1 and any *three* from the rest.

1. Fill in the blanks : 1×25=25
- (a) In digital electronics binary 0 is represented by _____ volt.
 - (b) In digital electronics binary 1 is represented by _____ volt.
 - (c) A logic gate can have only one output, either 1 or _____.
 - (d) Logic gate operates on the principle of _____ algebra.

[Turn over

- (e) A Boolean expression can be written either as _____ or POS.
- (f) NOR gate is basically OR gate followed by a _____ gate.
- (g) NAND gate is basically _____ gate followed by a NOT gate.
- (h) NOR and NAND gates are known as _____ gate.
- (i) Flip-Flop can hold a binary _____.
- (j) The base of binary number system is _____.
- (k) The base of octal number system is _____.
- (l) The base of hexadecimal number system is _____.
- (m) The base of decimal number system is _____.
- (n) Binary of 29_{10} is _____.
- (o) Hexadecimal of 255_{10} is _____.
- (p) Octal of 92_{10} is _____.

- (q) Decimal of 110111_2 is _____.
- (r) Decimal of FA_{16} is _____.
- (s) Binary of $AF3_{16}$ is _____.
- (t) Octal of 10110011_2 is _____.
- (u) Hexadecimal of 7023_8 is _____.
- (v) One's complement of 11001010_2 is _____.
- (w) Two's complement of 11001010_2 is _____.
- (x) Gray code of 11101010_2 is _____.
- (y) Binary of 10100110_{Gray} is _____.
2. (a) With logic diagram and truth table define :
OR, AND, NOT, XOR gate. 8
- (b) Draw logic circuit of OR and AND gate using NOR gate only. $3\frac{1}{2} \times 2 = 7$
3. (a) Describe the working of Half adder and Full adder with truth table and logic diagram. 8
- (b) Describe the working of full sub-tractor with truth table and logic diagram. 7

4. (a) What is multiplexer ? Draw and explain an 8 to 1 multiplexer. $2+6=8$
- (b) With diagram explain the working of a decimal to BCD encoder. 7
5. (a) What is the difference between combinational logic and sequential logic ? With diagram and truth table explain the principle of JK flip-flop. $2+6=8$
- (b) What is a register ? What are the different types of registers ? Draw a 4 bit serial-in-serial-out shift register. $1+2+4=7$
6. (a) What is a binary counter ? Explain the principle of a binary counter with logic and timing diagram. $2+6=8$
- (b) Write short notes on any two : $3\frac{1}{2}\times 2=7$
- (i) Modulus of a counter.
- (ii) ASCII Code.
- (iii) BCD Code.