Total No. of printed pages = 6

RETEST EXAMINATION – 2019

Semester : 4th (Old)

Subject Code : Et-403

DIGITAL ELECTRONICS

Full Marks – 70

Time – Three hours

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

Instruction :

1. *All* questions of PART – A are compulsory.

PART – A

Marks – 25

1. Multiple choice questions : 1×5=5

(a) The number of cells of a four variable K-map is

(i) 4 (ii) 8

(iii) 16 (iv) 20

[Turn over

(b) In Excess-3 code the decimal equivalent of 46 is

(i) 1000 0110 (ii) 0110 1001

(iii) 0100 0110 (iv) 1001 1000

(c) How many bits are required to store one BCD digit

(i) 1 (ii) 2

(iii) 4 (iv) 8

(d) In SR flip-flop which condition is not allowed ?

(i) S=R=0 (ii) S=0, R=1

(iii) S=1, R=0 (iv) S=R=1

(e) Which one of the following is the De-Morgan's theorem

(i) $\overline{AB} = AB$

(ii) $\overline{A}+\overline{B} = \overline{AB}$

(iii) $AB = \overline{A}+\overline{B}$

(iv) $\overline{A+B} = A+B$

2. Write true or false : 1×10=10

(a) 2's complement of $(1000)_2$ is $(1000)_2$.

(b) Gray code of decimal digit 6 is 0011.

(c) In signed binary numbers, MSB is the sign bit.

(d) A seven segment display consist of seven LED.

(e) IC 74138 is a multiplexer IC.

(f) A decoder as demultiplexer.

(g) Memory is an example of combinational logic.

(h) Clear signal is same as reset signal.

(i) In a synchronous counter all the flip-flops are clocked together.

(j) Logic gat can be used as electronics switched.

3. Fill in the blanks : 1×10=10

(a) ROM is a _____ memory.

(b) The octal equivalent of binary number (1001010) is _____.

(c) ASCII stands for _____.

(d) Each term in SOP form is called _____.

(e) Race around condition is occurred in _____ flip-flop.

(f) A Giga byte equals _____ bytes.

(g) A full Adder consists of _____ gates.

(h) Flip-flop can be used as _____.

(i) Nand and NOR gate is called _____.

(j) $10010.11_2+1000.01_2$ = _____.

PART – B

Marks – 45

4. Convert the following : 2×5=10

(a) 10111011_2 into gray code

(b) 255_{10} into hexadecimal code

(c) 352_8 into decimal

(d) 10111011_2 into 2's complement from

(e) 625.25_{10} into binary.

5. Answer any *three* questions : 3×5=15

(a) Give the difference between static and dynamic RAM.

(b) With symbol and truth table, define OR, NOR and EX OR gate.

(c) Prove using Boolean algebra

$A+\overline{A}B = A+B$.

(d) Distinguish between synchronous and asynchronous counter.

6. Answer any *four* questions : 4×5=20

(a) What is flip-flop ? Describe JK flip-flop with circuit diagram and truth table.

(b) Minimise the following logic function using K-Map method.

$f(A,B,C,D) = (0,124578) + d(10,11,14)$

(c) What is shift register ? Explain any one type of shift register with neat diagram.

(d) What is a counter ? Explain the principle of a 4-bit counter.

(e) What is multiplexer ? Draw and explain the logic circuit of a 4:1 multiplexer.

(f) Write short note on any *one* of the following :

(i) LED and LCD

(ii) TTL circuit

(iii) A/D converter.