KE-7423

Integrated M. C. A. (Sem. I) Examination, December-2024

IMCA - 103T

DIGITAL ELECTRONICS

Time allowed : **Three Hours**

Max. Marks : **70**
Min. Marks : **28**

This question paper contains two sections as under:

SECTION - A

Max. Marks-20

This section will have 10 questions, having 02 questions from each unit with no internal choice. Answer in about 20 words. All questions will have equal marks. (10×2=20)

SECTION - B

Max. Marks-50

This section will have 10 questions, having 02 questions from each unit, one question to be attempted from each unit. Word limit approximately 400-500 words. Questions may have sub divisions. All questions will have equal marks. (10×5=50)

SECTION - A

1 (i) What is Truth Table ?

(ii) What is 'Data Selector' ?

(iii) Define Flip Flop.

(iv) Define Ripple Counter.

(v) What is full substractor ?

(vi) Convert $(5C7)_{16} = (\ ?\ )_{10}$.

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(vii) Convert $(10110)_2 = (\ ?\ )_{10}$.

(viii) Define A/D converter.

(ix) What do you mean by minterns ?

(x) Convert $(99)_{10} = (\ ?\ )_8$.

SECTION - B

UNIT - I

2 If X = 1010100 and Y = 1000011 compute X – Y and Y – X using 1's complement and 2's complement.

OR

Represent the decimal number 27 in

(i) BCD Code

(ii) Octal Code

(iii) Gray Code

UNIT - II

3 Prove NAND and NOR Gates are universal gates.

OR

With the help of Truth Table explain functions of NOR-gate and also realize all basic logic gates from it.

UNIT - III

4 Simplify the following Boolean function using K-map methods.

$F(W, X, Y, Z) = \Sigma(0, 1, 2, 5, 8, 9, 10)$

OR

Draw the block diagram of digital multiplexer and explain its function.

UNIT - IV

5 Discuss the features of ripple counter in detail and design a 3-bit Ripple Counter using JK-Flip Flop along with its Truth Table.

OR

Define the working of Master-slave Flip Flop with Truth Table and Logic Diagram.

UNIT - V

6 Draw the block diagram of a digital Multiplexer and explain its functions.

OR

Explain :

(i) Weighted Register

(ii) AID Converter

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