No. of Printed Pages : 4
Roll No.

180832/170832/120832/
30832/31034/106544

Computer Engg / IT / Eletx.

Subject : Digital Electronics / Digital Eltx-I

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

Q.1 A _____ signal varies continuously with time.

Q.2 In _____ codes, each digit of the code do not have any position weight.

Q.3 There are _____ cells in a 3 variable K-Map.

Q.4 A 16:1 MUX has _____ number of select lines.

Q.5 A counter is a _____ circuit consisting of a combination of flip flops used for counting pulses (combinational/Sequential).

Q.6 Expand the terms PIPO and PISO.

Q.7 A _____ FF does not have a race around condition.

Q.8 A full adder is having _____ inputs and _____ outputs.

https://www.hsbteonline.com

Q.9 For a five input OR gate there can be _____ input combination in the truth table.

Q.10 Find the 2's Complement of the binary number 01100111.

SECTION-B

Note: Very Short answer type questions. Attempt any ten questions out of twelve. 3 x 3 10x2=20

Q.11 Define A/D and D/A convertor.

Q.12 Define Ring counter.

Q.13 Define encoder and decoder.

Q.14 Define De-Morgan theorem.

Q.15 Convert $(101011)_2$ to Gray code.

Q.16 What are digital signals?

Q.17 Name different types of semiconductor memories.

Q.18 Convert the following binary numbers to decimal

(i) $(0100110)_2 = (\ )_{10}$

(ii) $(10101010)_2 = (\ )_{10}$

Q.19 Give the Truth table for NAND gate.

Q.20 Give the truth table and the logic diagram of a full adder.

Q.21 Define positive edge triggered flip flop.

https://www.hsbteonline.com

Q.22 Give the logic diagram of 4 bit serial in serial out shift register using D flip flop.

SECTION-C

Note: Short answer type questions. Attempt any five questions. 5x8=40

Q.23 Perform

(i) $(16)_{10} - (5)_{10}$ using 1's Complement.

(ii) $(10)_{10} - (14)_{10}$ using 2's Complement.

Q.24 What do you mean by error detection codes? Explain about even parity.

Q.25 Why NAND and NOT gates are called universal gates?

Q.26 Simplify the expression using Boolean algebra and draw the logic circuit of the simplified expression.

$\bar{A}\ B\ \bar{C} + \bar{A}\ \bar{B}\ C + \bar{A}\ B\ C + \bar{A}\ \bar{B}\ \bar{C}$

Q.27 Write short note on four bit adder.

Q.28 Give the basic function of a MUX. Draw block diagram and Truth Table of a 8 x 1 MUX.

Q.29 Differentiate between synchronous and asynchronous counter.

Q.30 What is race abound condition and how is it removed.

Q.31 Write difference between static and dynamic memories.

Q.32 Discuss the working principle of D/A converter.

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 Explain with block diagram the working of a 4-bit SISO shift register.

Q.34 Draw a K-Map to reduce the following function and realize the reduced function using NAND gates only

$$F = \sum m\,(0, 1, 3, 6, 11, 15) + d\,(2, 5, 13)$$

Q.35 What are logic gates? Explain all logic gates with symbol and Truth Table.

Q.36 Write short notes on any two

(i) JK master slave flip flop

(ii) R-2R ladder D/A convertor

(iii) Postulates of Boolean algebra

(**Note:** Course outcome/CO is for office use only)