No. of Printed Pages : 4 220832/212832
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3rd Sem / Computer, ECE, Automation & Robotics, Computer (For Speech and Hearing Impaired), ECE (For Speech and Hearing Impaired)

Subject : Digital Electronics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which number system has a base 16. (CO1)

a) Hexadecimal c) Binary
b) Octal d) Decimal

Q.2 A digital circuit that can store only one bit is a : (CO2)

a) Register c) Flip Flop
b) NOR Gate d) XOR Gate

Q.3 2's Complement of 1011011 is : (CO1)

a) 0100011 c) 0100011
b) 0110101 d) 0100101

Q.4 In the toggle Mode, a JK Flip Flop has: (CO4)

a) J=0, K=1 c) J=0, K=0
b) J=1, K=1 d) J=1, K=0

Q.5 De Morgan's law states that: (CO2)

a) (A+B)' = A'+B c) (AB)' = A'+B
b) (AB)' A'+B' d) (AB)'=A+B

Q.6 The logical sum of two or more than two logical products is terminal as: (CO2)

a) OR Operation c) SOP
b) POS d) NAND Operation

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 $(13)_{10} = (\_\_\_\_\_)_2$ (CO1)

a) 1101 b) 1110
c) 1100 d) 1111

Q.8 The BCD code for decimal number 67 is: (CO1)

a) 01101001 b) 01010111
c) 01010110 d) 01100111

Q.9 Which gate is known as universal gate? (CO2)

a) AND b) OR
c) NAND d) NOR

Q.10 In a Boolean Algebra X+1 = _____ (CO2)

a) 0 b) 1
c) X d) None

Q.11 A 8:1 MUX has_____ select lines. (CO3)

a) 8 b) 4

c) 3 d) 2

Q.12 Which material is used in the construction of LED (CO5)

a) Silicon b) Gallium phosphide

c) Germanium d) None

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Subtract (CO2)

a) $(0101)_2$ from $(1011)_2$

b) $(0011)_2$ From $(1000)_2$

Q.14 Write a short note on logic families. (CO2)

Q.15 Prove by using truth tables. (Co2)

a) A(B+C) = AB+AC

b) A(BC) = (AB) C

Q.16 What are the differences between sequential circuit and combinational circuit. (CO4)

Q.17 Realize the expression using a multiplexer. (Co3)

$F(A,B,C,D) = \hat{I} M(0,1,5,9,14)$

Q.18 What are the advantages of LED owner LED display devices? (CO5)

Q.19 Explain how JK flip-flop can work as T flip flop. (CO4)

Q.20 Explain the working of 3 bit synchronous counter. (CO4)

Q.21 What are the differences between static Memory and Dynamic Memory? (CO5)

Q.22 Draw and explain pulsed operation of 3 input AND gate. (CO3)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Example with diagram with working of BIT synchronous counters. (CO4)

Q.24 Explain the working of PIPO shift register with the help of pulse wave diagram and truth table. (CO4)

Q.25 Reduce the following Boo lean expression by using K-map and realize the reduced Expression by using NAND gates only.

$Y = \hat{I} M(1,3,7,11,15) + d(0,2,5)$ (CO2)