3rd Sem / Comp, IT, Eltx, EI, Med. Eltx., Power Eltx, Elect. & Eltx. Engg.

Subject:- Digital Electronics / Digital Eltx. - I

Time : 3Hrs.   M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory   (10x1=10)

Q.1 The binary number 10101 is equivalent to decimal number_____   (CO2)
a) 19   b) 12
c) 27   d) 21

Q.2 The inputs of a NAND gate are connected together. The resulting circuit is_____   (CO3)
a) OR gate   b) AND gate
c) NOT gate   d) None of the above

Q.3 Excess-3 code is known as_____   (CO2)
a) Weighted code
b) Cyclic redundancy code
c) Self-complementing code
d) Algebraic code

Q.4 The result "X + XY = X" follows which of these laws?   (CO5)
a) Consensus law   b) Distributive law
c) Duality law   d) Absorption law

Q.5 A half adder can add_____ number of bits. (CO6)
a) 1   b) 3
c) 2   d) 4

Q.6 The basic storage element is a digital system is_____   (CO8)
a) flip flop   b) Counter
c) multiplexer   d) encoder

Q.7 What is the maximum modulus of a counter with four number of flip flop?   (CO9)
a) 4   b) 32
c) 8   d) 16

Q.8 What value is to be considered for a "don't care condition"?   (CO5)
a) 0
b) 1
c) Either 0 or 1
d) Any number except 0 and 1

Q.9 Sift register is a combination of_____   (CO10)
a) Flip Flops   b) Encoders
c) Decoders   d) Counters

Q.10 A+A(bar)= _____   (CO5)
a) 0   b) 1
c) A   d) A(bar)

SECTION-B

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

Q.11 The number of digits in octal system is_____ (CO1)

Q.12 2's complement of 000001 is_____ (CO2)

Q.13 The outputs of a Full adder are_____ and _____ (CO5)

Q.14 A+1 =_____ (CO6)

Q.15 SIPO stands for_____. (CO10)

Q.16 A NAND gate is basically a _____ gate followed by _____ gate. (CO4)

Q.17 IC used for ALU is_____. (CO12)

Q.18 Which flip-flop is used to make all types of shift register? (CO7)

Q.19 The minimum number of flip flops required for a decade counter is_____. (CO8)

Q.20 EPROM stands for_____. (CO12)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain in brief the need of digitization. (CO1)

Q.22 i) Convert 110101 and 100110111 to octal numbers. (CO1)
    ii) Convert 135 to binary number. (CO1)

Q.23 Draw symbol and truth table of OR gate and AND gate. (CO2)

Q.24 i) Define Distributive Law. (CO3)
    ii) Define De Morgan's Theorem. (CO3)

Q.25 Simplify: $F=(\bar{A}+B)(A+B+D)\bar{D}$. (CO3)

Q.26 Design and implement a half adder with neat circuit diagram. (CO4)

Q.27 Reduce the Boolean expression by using K-Map.
    $Y= \Sigma m(1,3,7,11,15)+d(0,2,5)$ (CO5)

Q.28 Realize the following function by using a multiplexer. (CO7)
    $F(A,B,C) = \Sigma m(0,3,4,5,7)$

Q.29 Explain 4-Bit comparator with diagram. (CO8)

Q.30 Explain Edge Triggered R-S Flip-Flop. (CO8)

Q.31 Explain Octal to Binary encoder with block diagram. (CO7)

Q.32 Explain any one application of shift register. (CO10)

Q.33 Write a short note on universal shift register. (CO10)

Q.34 Differentiate between static and dynamic RAM. (CO11)

Q.35 Explain the working of single slope A/D convertor. (CO12)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain the working of Master -Slave J-K Flip-Flop. How it is helpful in Solving the problem of Race Around condition? (CO8)

Q.37 Explain in detail with the help of diagram about R/2R Ladder digital to analog converter. (CO11)

Q.38 What do you mean by semiconductor memories? Explain various types of ROM memories (CO12)