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3rd Sem
Subject:- Digital Eltx - I

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 One byte is equal to_____ nibble. (CO2)
a) 1 b) 2
c) 3 d) 4

Q.2 The binary number of decimal numbers 32 is_____. (CO2)
a) (100000)2 b) (101100)2
c) (111111)2 d) (010101)2

Q.3 What are the advantages of the digital systems? (CO4)
a) High-efficiency b) Uses less bandwidth
c) Encryption d) All of the above

Q.4 According to Boolean algebra, which of the following is Valid? (CO5)
a) X+X = 1 b) 1.X = 1
c) 0.X = X d) X.X = 1

Q.5 A half adder consists_____. (CO6)
a) one input one output b) one input two outputs
c) two inputs two outputs d) two inputs one output

Q.6 The output of multiplexer depends on its_____. (CO7)
a) Data outputs b) Data inputs
c) Selected inputs d) None of the above

Q.7 The group of flip-flops is also known as_____. (CO8)
a) Registers b) Counters
c) Encoders d) None of the above

Q.8 How much data the shift register can store? (CO10)
a) only one bit b) only two bits
c) only three bits d) None of the above

Q.9 A four variable K-Map has_____cells. (CO5)
a) 4 b) 16
c) 8 d) 10

Q.10 The base of radix represents_____. (CO10)
a) Number of bits b) Number of digits
c) Number of symbols d) All of the above

SECTION-B

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

Q.11 _____ signal is used in communication process to minimize the effect of noise. (CO1)

Q.12 Which logic unit is the fastest of all the logic families? (CO2)

Q.13 Half adder has_____ number of inputs. (CO5)

Q.14 Name the Boolean Law: (Co6)
A+B = B+A

Q.15 PIPO stands for_____. (Co10)

Q.16 A device which converts a decimal number into BCD form is called_____. (CO8)

Q.17 How many NOR gates are required to obtain AND operation? (CO12)

Q.18 How many select lines will a 16 to 1 multiplexer will have. (CO7)

Q.19 How many flip flops are required to construct a decade counter. (CO8)

Q.20 The process of entering data into a ROM is called _____. (CO12)

SECTION-C

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

Q.21 i) Define digital signal. (CO1)

ii) Convert $(101011)_2$ into Gray Code (CO3)

Q.22 Perform (Co3)

I) $(16)_{10} - (5)_{10}$ using 1's complement.

ii) $(32.7)_8$ to Binary .

Q.23 Explain NOR gate with its truth table and circuit diagram. (CO4)

Q.24 Simplify the expression $(A+C)(AD+AD^{---}) + AC + C$ using Boolean algebra. (CO5)

Q.25 Write short note on four-bit adder. (CO6)

Q.26 Give the basic function of MUX. Draw block diagram and Truth Table of 8x1 MUX. (CO7)

Q.27 Differentiate between synchronous and asynchronous counter. (CO9)

Q.28 What is race around condition? and how it can be removed ? (CO8)

Q.29 Write short notes on postulates of Boolean algebra. (CO5)

Q.30 Explain the working of 3-to-8 decoder with truth table? (CO7)

Q.31 Explain the operation of D flip-flop with diagram. (CO7)

Q.32 Explain NOR gate with truth table. (CO4)

Q.33 Explain with diagram about SISO shift register. (CO10)

Q.34 What do you mean by counter? Explain applications of counters. (CO9)

Q.35 Explain successive approximation A/D converter. (CO11)

SECTION-D

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

Q.36 Draw a k-map to reduce the function and realize the reduced function by using NAND gates. (CO3)
$F=\Sigma m(0,1,2,4,5,6,8,9,12,13,14)$.

Q.37 What is an encoder? Draw the logic circuit of a decimal to BCD encoder and its working. (CO7)

Q.38 Write short note on :

I) De Morgan's theorem (CO3)

ii) EPROM (CO12)

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