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3rd Sem / Comp,IT,Eltx,El,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 What is a digital-to-along converter? (CO5)

a) It stores digital data on the computer.
b) It converts alternating current (AC) into direct current (DC)
c) It converts electrical power into mechanical power.
d) It takes the digital data from an audio CD and converts it to a useful form.

Q.2 What is the addition of the binary number 101001+010011=? (CO1)

a) 010100 b) 111100
c) 000111 d) 101110

Q.3 What is the binary subtraction of 101001-010110=? (CO1)

a) 010011 b) 100110
c) 011001 d) 010010

Q.4 Temperature variation is a/an (CO1)

a) Analog quantity
b) Digital quantity
c) Either Analog or Digital quantity
d) none of these

Q.5 The primary difference between a counter and a register is (CO4)

a) A counter has the capability to store n bit of information whereas a register has one bit .
b) A register counts data.
c) A register has no particular sequence of states.
d) A counter has no particular sequence of states.

Q.6 A register can be defined as (CO4)

a) The group of transistors for storing n-a bit of information.
b) The group of transistors for storing two bits information.
c) The group of flip-flops for storing n bit of information.
d) The group of flip-flops for storing binary information.

Q.7 Why is a decoder used in digital electronics? (CO3)

a) To convert non coded information into a binary coded form.
b) To convert coded information into a non-coded form.
c) It is used to divide address bus and data bus.
d) None of these

Q.8 The basic building blocks of the arithmetic logic unit in digital computers are known as: (CO3)

a) Adders b) Demultiplexer
c) Attenuator d) Subtractors

Q.9 In Digital electronics (Boolean algebra), the OR operation is performed by Which of the given properties: (CO2)

a) Distributive properties
b) Commutative properties
c) Associative properties
d) All of these

Q.10 The excess -3 code for 584 is given by (CO1)
a) 100010110111 b) 10001110111
c) 100010010110 d) 100001010110

SECTION-B

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

Q.11 Define Bit (CO1)
Q.12 Base of a decimal number system is_____ (CO1)
Q.13 A 2-bit parallel adder ear add_____bits binary number. (CO3)
Q.14 IC 74181 is_____bit ALU (CO5)
Q.15 Define flip flop. (CO4)
Q.16 _____flip flop does not have race around condition. (CO4)
Q.17 Define Register . (CO4)
Q.18 Full form of SIPO for_____ (CO4)
Q.19 ROM stands for _____ (CO5)
Q.20 There are _____ cells in a 4 variable k-map.(CO2)

SECTION-C

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

Q.21 Define an analog signal and give fine example of analog signal. (CO1)
Q.22 Subtract $(10011)_2$ from $(11001)_2$ by using 2's complement method of subtraction. (CO1)
Q.23 a) Convert $(162)_{10}$ into excess-3 code. (CO1)
b) Convert 11000110 Excess-3 codes into decimal number.

Q.24 Draw the symbol, logical expression , truth table and pulsed operation of an XOR gate. (CO2)
Q.25 State and Explain DE Morgan's theorems. (CO2)
Q.26 Write a short note on 4 bit binary adder. (CO3)
Q.27 Implement logic expression. (CO3)
$Y=\overline{A}B\overline{C}+A\overline{B}C+ABC$ using a Multiplexer.
Q.28 Differentiate between Synchronous and Asynchronous counter. (CO4)
Q.29 Explain JK Flip Flop . (CO4)
Q.30 Explain Decimal to BCD encoder. (CO4)
Q.31 Explain positive edge and negative edge triggered pulse. (CO4)
Q.32 Explain SIPO shift register (CO4)
Q.33 Differentiate between RAM and ROM. (CO5)
Q.34 Solve the following Boolean expression (CO2)
$\overline{XY}+\overline{XZ}+\overline{XYZ}$
Q.35 Minimize the following Boolean expression by using K-map (CO2)
$Y=\overline{ABC}+\overline{A}B\overline{C}+AB\overline{C}+A\overline{B}\,\overline{C}$.

SECTION-D

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

Q.36 Simplify using K-map & realize using NAND Gates only . (CO2)
$F(A,B,C,D)=\sum M(0,2,3,6,7,12,13,14,)+\sum d(1,4,11,15)$
Q.37 Explain the diagram the working of synchronous Decade Counter. (CO4)
Q.38 Explain the working of SISO shift register with the help of pulse diagram. (CO4)