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

Subject : Digital Electronics/Digital Eltx. I

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 NOT gate has _____ input.

a) 3 b) 2

c) 1 d) 4

Q.2 Base/Radix of Hexadecimal number system is_____.

a) 10 b) 8

c) 2 d) 16

Q.3 Output of EX-OR gate is _____ when both of its inputs are HIGH.

a) 1 b) 0

c) Invalid d) None of the above

Q.4 A dual group in K-maps eliminates _____ number of variables.

a) 2 b) 4

c) 3 d) 1

Q.5 A full adder has _____ inputs.

a) 2 b) 3

c) 4 d) 5

Q.6 A 1:8 demultiplexer has _____ output lines.

a) 2 b) 3

c) 4 d) 8

Q.7 A universal shift register is a _____ circuit.

a) Sequential b) Combinational

c) Both A and B d) None of these above

Q.8 If S = o & R = 1 then the output (Q) of S-R flip flop is _____.

a) 1 b) 0

c) Invalid d) None of the above

Q.9 Decade counter has _____ states.

a) 5 b) 9

c) 4 d) 10

Q.10 The full form of ALU is _____

a) Adder Logic Unit

b) Arithmetic Logic Unit

c) Add Loop unit

d) All of these

SECTION-B

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

Q.11 Give any one advantage of digital signal over analog signal.

Q.12 Draw the symbol and truth table of EX-OR Gate.

Q.13 State De-Morgan's Theorem.

Q.14 Give a truth tables of 4:1 multiplexer.

Q.15 Full Form of EPROM is _____.

Q.16 Write any one advantage of the flip flop over the latch.

Q.17 Explain the mode number (Modulus) in the counter.

Q.18 Expand TTL.

Q.19 Give the IC number of 4-bit ALU.

Q.20 Define Accuracy in DAC

SECTION-C

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

Q.21 Differentiate between Analog signal and digital signal.

Q.22 Convert $(6A8C)_{16}$ Hexadecimal number into binary number.

Q.23 Explain 3-bit. Excess-3, code and Gray code.

Q.24 Explain the NOR gate as a universal logic gate.

Q.25 Explain the Full adder with circuit diagram.

Q.26 Define 8:1 multiplexer.

Q.27 Explain Decimal to BCD Encoder.

Q.28 Subtract 0101 from 1101 using 2's complement method of subtraction.

Q.29 What is race around condition in J-K flip flop?

Q.30 Differentiate between latch and flip flop.

Q.31 Explain synchronous counter.

Q.32 Explain Concept of weighted & non weighted codes.

Q.33 Explain ALU in detail.

Q.34 Give symbol and truth table of Sr-flip and JK - flip flop.

Q.35 Explain Half adder.

SECTION-D

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

Q.36 Simplify with the help of K-MAP f(A, B, C, D) = $\Sigma m = (0, 2, 3, 6, 8, 10, 12, 15) + d(4, 11, 14)$ and realize the expression using NAND gates.

Q.37 Explain R/2R ladder digital to analog coverter with neat diagrams.

Q.38 Write a short note on any two of the following:

a) Ring counter b) Dynamic RAM,

c) D-flip flop