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3rd Sem / Comp., ECE, Automation & Robotics, Comp. (For Speech & Hearing Impaired)

Subject:- Digital Electronics

Time : 3Hrs. M.M. : 60

SECTION-A

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

Q.1 The universal gate is _____

a) NAND b) OR

c) AND d) NOT

Q.2 In 8:1 MUX, How many select lines are required ?

a) 4 b) 3

c) 2 d) 1

Q.3 If J=0 and K=1 then the output Q= _____.

a) 1 b) 0

c) non change d) Toggle

Q.4 The full form of ALU is _____

a) Adder Logic Unit

b) Add Loop Unit

c) Arithmetic Logic Unit

d) None of the above

Q.5 The binary equivalent of decimal number 5 is _____

a) 101 b) 100

c) 001 d) 111

Q.6 If A=0 and B=0 then A.B=_____

a) 0 b) 1

c) 10 d) 11

SECTION-B

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

Q.7 State De-Morgan's Theorem.

Q.8 X+XY=_____

Q.9 _____ flip-flop doesn't have race around condition.

Q.10 BCD code for decimal number 67 is _____

Q.11 Expand CMOS.

Q.12 Draw the symbol of EX-OR Gate.

SECTION-C

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

Q.13 Convert $(6A8C)_{16}$ into binary number.

Q.14 Define NAND Gate. Also draw symbol and truth table of NAND Gate.

Q.15 What is race around condition in J-K flip-flop.

Q.16 Explain full adder with circuit diagram.

Q.17 Subtract the $(10011)_2$ from $(11001)_2$ using 2's complement method.

Q.18 Write any four differences between Static RAM and Dynamic RAM.

Q.19 List various application of A/D converter.

Q.20 Explain Half Adder with diagram.

Q.21 Simplify: $ABC + \overline{A}BC + A\overline{B}C + AC$

Q.22 Differentiate between Asynchronous and Synchronous Counters.

SECTION-D

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

Q.23 Minimize the following Boolean expression using K-map and realize the logic circuit using NAND gates only.

$F(A,B,C,D) = \Sigma m(1,3,5,7,9,15) + d(4,6,12,13)$

Q.24 Explain 8:1 MUX with truth table and diagram.

Q.25 Explain BCD to 7 segment decoder.