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3rd Sem / Artificial Intelligence & Machine Learning

Subject : Digital Electronics & Microcontrollers

Time : 3 Hrs. M.M. : 60

SECTION-A

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

Q.1 A byte is a string of _____ bits. (CO-1)

a) 2 b) 4

c) 6 d) 8

Q.2 A NAND gate is equivalent to an AND gate followed by _____ gate (CO-1)

a) OR b) NOT

c) NOR d) AND

Q.3 The number of select line for 8:1 MUX are _____. (CO-2)

a) 6 b) 4

c) 2 d) 3

Q.4 A three variable K-Map has _____ cells. (CO-2)

a) 4 b) 16

c) 8 d) 10

Q.24 Simplify using K-Map and realize the circuit with NAND gates only. (CO-3)

$Y=\sum m(0,3,4,6,9,12)+d(10,13)$

Q.25 What are the specifications, features, and advantages, disadvantages and applications of microcontroller 8051? (CO-4)

Q.5 The basic storage element in digital systems is (CO-3)

a) Counter b) Encoder

c) Flip Flop d) Mux

Q.6 How many bits wide is the data bus in the 8051 microcontroller (CO-4)

a) 4 bits b) 8 bits

c) 16 bits d) 32 bits

SECTION-B

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

Q.7 One's complement of 101101 is _____ (CO-1)

Q.8 A.A= _____ (CO-1)

Q.9 What is commutative Law? (CO-2)

Q.10 16:1 MUX has _____ number of select lines. (CO-3)

Q.11 The modules of 4 bit binary counter is _____ (CO-4)

Q.12 There are _____ SFR's in 8051 (CO-4)

SECTION-C

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

Q.13 What are the advantages of digital signal over analog signal? (CO-1)

Q.14 Two's complement of 100101 is _____ (CO-2)

Q.15 Half adder has _____ number of inputs. (CO-2)

Q.16 Why NAND and NOT gates are called universal gates? (CO-2)

Q.17 Give the basic function of a MUX. Draw block diagram and Truth Table of an 8 x 1 MUX. (CO-2)

Q.18 Explain PIPO shift register. (CO-3)

Q.19 Differentiate between latch and Flip Flop. (CO-3)

Q.20 List different special function registers of 8051 and explain any of them. (CO-4)

Q.21 Explain Data memory and Program memory in 8051 microcontroller. (CO-4)

Q.22 Draw the pin diagram of 8051 microcontroller (CO-4)

SECTION-D

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

Q.23 What are logic gates? Explain all logic gates with symbol and Truth Table. (CO-1)