No. of Printed Pages : 4 202445/122445/062445
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4th Sem / MECHATRONICS
Subject:- DIGITAL ELECTRONICS

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 In Boolean algebra, A + A = _____ (CO-4)
a) 0 b) 1
c) A d) 2A

Q.2 1 Byte = _____ bits. (CO-2)
a) 2 b) 4
c) 6 d) 8

Q.3 Base of octal number system is ___ (CO-2)
a) 2 b) 4
c) 8 d) 16

Q.4 A decade counter can count from ___ (CO-8)
a) 1 to 9 b) 0 to 9
c) 1 to 10 d) 0 to 10

Q.5 A 4 variable K map has ___ cells. (CO-5)
a) 4 b) 8
c) 16 d) 32

Q.6 1's complement of 1010 is ___ (CO-2)
a) 0101 b) 1011
c) 0110 d) 1001

SECTION-D

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

Q.36 Define Race around condition, how it affects JK Flip Flops? (CO-8)

Q.37 Simplify f (0,1,4,7,9,10,12,14) + d (2,11) using K-Map. Draw its logic diagram. (CO-5)

Q.38 Draw and explain the construction & working of successive approximation A/D converter. (CO-8)

Note: Course Outcome (CO) mentioned in the question paper is for official purpose only.

Q.7 16:1 Multiplexer has ___ select lines. (CO-7)

a) 1 b) 2

c) 4 d) 16

Q.8 MOD 10 counter requires ____ number of flip flops. (CO-8)

a) 2 b) 4

c) 8 d) 10

Q.9 AND Gate is universal gate. (CO-4)

a) True b) False

c) d)

Q.10 A+AB = _____ (CO-4)

a) 0 b) 1

c) A d) B

SECTION-B

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

Q.11 Write any two advantages of digitization. (CO-1)

Q.12 Expand EBCDIC. (CO-2)

Q.13 Draw symbol of NOR gate. (CO-4)

Q.14 Define parity. (CO-2)

Q.15 In Hexadecimal system, how number 14 is represented? (CO-2)

Q.16 Draw 7 segment display. (CO-7)

Q.17 Define Latch. (CO-8)

Q.18 Name any one flip flop IC. (CO-8)

Q.19 Expand LCD (CO-7)

Q.20 Define tri state buffer. (CO-8)

SECTION-C

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

Q.21 Compare TTL & CMOS logic families. (CO-4)

Q.22 State & Explain Demorgan's theorem. (CO-4)

Q.23 Draw & Explain EX-OR gate. (CO-4)

Q.24 Convert $(10101101)_2$ into gray code. (CO-2)

Q.25 Explain in brief the working of half adder. (CO-7)

Q.26 Draw the schematic of 1;8 demultiplexer; explain using truth table. (CO-7)

Q.27 Explain in brief the working of 8:3 encoder. (CO-7)

Q.28 Draw the schematic & truth table of D flip flop. (CO-8)

Q.29 Differentiate between asynchronous & sychronous counters. (CO-8)

Q.30 With the help of diagram, explain SIPO shift register. (CO-8)

Q.31 What is universal shift register? (CO-8)

Q.32 Explain in brief the characteristics of D/A converters. (CO-8)

Q.33 Compare in brief the Mealy& Moore models. (CO-8)

Q.34 Draw & explain R-2R D/A converter. (CO-8)

Q.35 Explain the concept of minimal cover table. (CO-8)