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Question Paper Code: 43506

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Electronics and Instrumentation Engineering

14UEI306 – DIGITAL ELECTRONICS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The three basic logic gates are
 - AND,OR and NOT gate
 - AND,OR and NOR
 - NAND, OR and NOT
 - None of the above
- Each square in a karnaugh map represents a
 - Points
 - Values
 - Minterm
 - Maxterm
- A comparator is a special combinational circuit designed primarily to compare the relative magnitude of _____ numbers .
 - two decimal
 - three decimal
 - two binary
 - three binary
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 - three decimal
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5. How is a J-K flip-flop made to toggle?
 (a) $J = 0, K = 0$ (b) $J = 1, K = 0$ (c) $J = 0, K = 1$ (d) $J = 1, K = 1$
6. What is a major disadvantage of RAM?
 (a) Its access speed is too slow (b) Its matrix size is too big
 (c) It is volatile (d) High power consumption
7. In positive logic, _____
 (a) a HIGH = 1, a LOW = 0 (b) a LOW = 1, a HIGH = 0
 (c) only HIGHS are present (d) only LOWs are present
8. For JK flip flop with $J=1, K=0$, the output after clock pulse will be _____
 (a) 0 (b) 1 (c) High Impedance (d) No change
9. PAL consists of a programmable _____ array and a fixed _____ array with output logic.
 (a) NAND and NOR (b) AND and NOR
 (c) NAND and OR (d) AND and OR
10. What is an OTP device?
 (a) Optical transporting port (b) Octal transmitting pixel
 (c) Operational topical portable (d) One-time programmable

PART - B (5 x 2 = 10 Marks)

11. What are called don't care conditions?
12. Define Multiplexer and draw its block diagram.
13. List out the applications of Flip Flops.
14. Define Glitch.
15. What is meant by PLA?

PART - C (5 x 16 = 80 Marks)

16. (a) Minimize the logic function $Y(A,B,C,D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$. Use Karnaugh map. Draw logic circuit for the simplified function. (16)

Or

- (b) Simplify the Boolean function using tabulation method.

$$Y(A, B, C, D) = \sum m(1, 2, 3, 5, 9, 12, 14, 15) + \sum D(4, 8, 11). \quad (16)$$

17. (a) Draw the block schematic of Magnitude Comparator and explain its operations. (16)

Or

- (b) Design BCD adder and explain its working with necessary circuits. (16)

18. (a) Sketch a 4-bit serial in serial out shift register and draw its waveforms. (16)

Or

- (b) Explain the operation universal shift register with logic diagram. (16)

19. (a) Design an Asynchronous circuit that has two inputs x_1 and x_2 and output z . The circuit is required to give an output whenever the input sequence (0,0) (0,1) and (1,1) received but only in that order. (16)

Or

- (b) Explain the different methods of state assignment. (16)

20. (a) Explain about RAM and its types. (16)

Or

- (b) Explain with neat diagrams a RAM architecture. (16)

