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Question Paper Code: 41536

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

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)

- Sum of product can be implemented with a group of
(a) NOT gates (b) OR gates (c) AND gates (d) XOR gates
- Each square in a karnaugh map represents a
(a) Points (b) Values (c) Minterm (d) Maxterm
- How many 3-line-to-8-line decoders are required for a 1-of-32 decoder?
(a) 1 (b) 2 (c) 4 (d) 8
- A comparator is a special combinational circuit designed primarily to compare the relative magnitude of _____ numbers .
(a) two decimal (b) three decimal (c) two binary (d) three binary
- 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
- In a 6-bit Johnson counter sequence there are a total of how many states, or bit patterns.
(a) 2 (b) 6 (c) 12 (d) 24

7. Race in which stable state depends on order is called
- (a) critical race (b) identical race
(c) non critical race (d) defined race
8. In design procedure of asynchronous circuit flow table is
- (a) increased to max states (b) reduced to min states
(c) changed (d) remain same
9. What is an OTP device?
- (a) Optical transporting port (b) Octal transmitting pixel
(c) Operational topical portable (d) One-time programmable
10. The storage element for a static RAM is
- (a) diode (b) resistor
(c) capacitor (d) flip-flop

PART - B (5 x 2 = 10 Marks)

11. What are called don't care conditions?
12. Draw the logic Symbol and construct the truth table for the two input EX – NOR gate.
13. List out the applications of Flip Flops.
14. What are the steps for the design of asynchronous sequential circuit?
15. What is programmable logic array? How it differs from ROM?

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) Using tabulation method simplify: $F(A, B, C, D, E) = \sum (0, 1, 4, 5, 16, 17, 21, 25, 29)$. (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) Design a 3 bit Johnson counter and explain its operation. (16)

Or

(b) Design a Moore type sequence detector to detect a serial input sequence of 101. (16)

19. (a) Explain with neat diagram the different hazards and the way to eliminate them. (16)

Or

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

20. (a) Explain with neat diagrams a RAM architecture. (16)

Or

(b) Explain in detail about PLA with a specific example. (16)
