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Question Paper Code: 33506

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Electronics and Instrumentation Engineering

01UEI306 – DIGITAL ELECTRONICS

(Regulation 2013)

Duration: 1.15 hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. 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) $J = 1, K = 1$

2. Which of the following is correct for a gated D flip-flop?

    (a) The output toggles if one of the inputs is held high

    (b) Only one of the inputs can be high at a time
    (c) The output complement follows the input when enabled
    (d) Q output follows the input D when the enable is high

3. 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

4. The systematic reduction of logic circuits is accomplished by

    (a) using Boolean algebra   (b) symbolic reduction
    (c) TTL logic   (d) using a truth table

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. 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. 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. _____ is the minimum time required to maintain a constant voltage levels at the excitation inputs of the flip-flop device.

      (a) Rise time   (b) Fall time

      (c) Setup time   (d) None of these

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Compute the minimized Boolean expression using K-map
$F = A'BC'D' + A'BC'D + ABC'D' + AB'C'D + A'B'CD'$ (8)

12. Design a combinational logic using a suitable multiplexer to realize the Boolean expression: $F = AD' + B'C + BC'D$.   (8)

13. Design a mod-7 synchronous binary counter using JK flip-flops.   (8)

14. Design a asynchronous sequential circuit specified by the following flow table. (8)

	00	01	10	10
A	A.O	A.O	A.O	B.O
B	A,O	A.O	B.1	B.1

15. Implement the BCD to XS3 code conversion using ROM.   (8)

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