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Question Paper Code: 52207

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

Second Semester

Computer Science and Engineering

01UCS207- DIGITAL PRINCIPLES AND SYSTEM DESIGN

(Common to Information Technology)

(Regulation 2013)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

- The output of an AND gate is LOW _____.
(a) when any input is LOW (b) when any input is HIGH
(c) when all inputs are HIGH (d) all the time
- When used with an IC, what does the term "QUAD" indicate?
(a) 4 circuits (b) 2 circuits (c) 8 circuits (d) 6 circuits
- Which of the following expressions is in the sum-of-products (SOP) form?
(a) $AB + CD$ (b) $AB(CD)$ (c) $(A + B)(C + D)$ (d) $(A)B(CD)$
- The systematic reduction of logic circuits is accomplished by:
(a) symbolic reduction (b) using Boolean algebra
(c) TTL logic (d) using a truth table
- A demultiplexer is used to
(a) perform arithmetic division
(b) select data from several inputs and route it to a single output
(c) steer the data from a single input to one of the many outputs
(d) perform parity checking

6. An EPROM.....
- (a) is of random – access type (b) is non – volatile
(c) is programmable (d) has all the above requirements
7. The basic shift register operations are
- (a) serial in serial out (b) serial in parallel out
(c) parallel in serial out (d) all of the above
8. For which of the following flip-flop the output clearly defined for all combinations of two inputs?
- (a) Q type flip-flop (b) R S type flip-flop
(c) J K flip-flop (d) T flip-flop
9. Combinations that are not listed for input variables are
- (a) overflows (b) carry (c) dont cares (d) zero bits
10. If two systems have different codes then circuit inserted between them is
- (a) sequential circuit (b) combinational circuit
(c) combinational sequence circuit (d) conversion circuit

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Reduce the following function using K-map technique and implement the reduced Boolean expression with basic gates
- $$f(A, B, C, D) = \pi M (0, 3, 4, 7, 8, 10, 12, 14) + d (2, 6). \quad (8)$$
12. Design a circuit that converts 8421 BCD code to Excess 3 code. (8)
13. Implement the following Boolean function using a 8 to 1 multiplexer
 $F(A, B, C, D) = A'BD' + ACD + B'CD + A'C'D$. Also implement the function using 16 to 1 multiplexer. (8)
14. Draw the state diagram and obtain the characteristic equation of T, D and JK flip-flop. (8)
15. Describe the design procedure for asynchronous sequential circuits. (8)

