

Q.P. Code – 68232

**Second Semester B.C.A. Degree Examination,
September 2020**

(CBCS)

Computer Science

DIGITAL ELECTRONICS

Time : 3 Hours]

[Max. Marks : 90

Answer ALL Sections.

SECTION – A

Answer **any ten** questions:

(10 × 1 = 10)

1. What is an Passive Electronic Component?
2. Define Bit.
3. Give an example for weighted code.
4. Write an application of Gray code.
5. Define Parity check.
6. Who invented Boolean Algebra?
7. Define combination logic circuit.
8. What are flip flops?
9. What is Race around condition?
10. What is a shift register?
11. Expand ASCII.
12. Define Analog Signal.

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SECTION – B

Answer any **FIVE** of the following questions.

(5 × 3 = 15)

13. Write any 3 characteristics of digital IC's.
14. By converting the following decimal numbers into binary perform subtraction by using 2's complement method.
 - (a) $15_{(10)}$ from $22_{(10)}$
 - (b) $12_{(10)}$ from $18_{(10)}$.
15. Convert the given binary number $(1001)_2$ to Gray Code.
16. Realise AND, OR, NOT and XOR using NAND Gate.
17. Explain the operation of T flip flop with logic circuit and truth table.
18. Simplify the following Boolean Expression $\overline{A}\overline{B}(C + BD) + \overline{A}\overline{B}$.
19. Convert $F = (A + B)(A + \overline{C})$ into standard POS form.

SECTION – C

Answer any **SIX** of the following questions.

(6 × 5 = 30)

20. Write a note on Resistors.
21. Convert
 - (a) $(1100.11)_2$ to $()_{10}$
 - (b) $(36.76)_{10}$ to $()_2$
 - (c) $(110101.1110)_2$ to $()_8$
 - (d) $(642)_8$ to $()_{10}$
 - (e) $(393.42)_{10}$ to $()_8$
22. Explain half adder with logic circuit diagram using X-OR and basic gates and explain with truth table.
23. State and prove De Morgan's Theorem.
24. Explain 4 bit parallel binary adder with a neat diagram.

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25. Explain 4 : 1 MUX with a logic symbol, logic circuit and truth table.
26. Explain RS flip flop with a logic symbol, logic circuit and truth table.
27. Explain Decimal to BCD encoder with a neat circuit diagram and truth table.

SECTION – D

Answer any **FIVE** of the following questions.

(5 × 7 = 35)

28. Explain different waveforms.
29. (a) Simplify the following Boolean expression using K-Map. **(4)**
$$f(A,B,C,D) = \sum m(0,1,3,6,7,9,10,15) + d \sum (2,11,14)$$

(b) Explain Excess 3 code with an examples. **(3)**
30. Explain FULL subtractor with a neat logic circuit diagram, truth table with its expression.
31. Explain Master Slave flip flop using JK flip flop with symbol, block diagram, circuit diagram and a truth table.
32. (a) Explain 1 : 8 DEMUX with a logic symbol, circuit diagram and a truth table.
(b) Write the applications of De-Multiplexer. **(5 + 2)**
33. Explain SISO shift register with a neat block diagram with different clock pulses.
34. Explain the following gates with its logic symbol, truth table and circuit diagram.
 - (a) AND Gate
 - (b) OR Gate
 - (c) NOT Gate
 - (d) XOR Gate**(2 + 2 + 1 + 2)**

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