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I Semester B.C.A. Degree Examination, April - 2022

COMPUTER SCIENCE

Digital Electronics

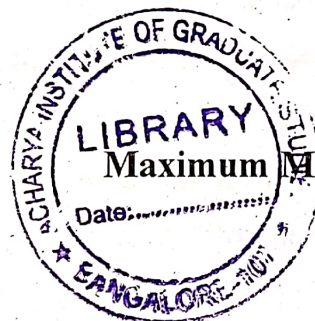
(CBCS Scheme 2018)

Paper : BCA 104T

Time : 3 Hours

*Instructions to Candidates:*

Answer all questions.



## SECTION - A

Answer any ten questions.

(10×2=20)

1. Define active element in network.
2. What is ohm's law?
3. Simplify the following  $PQR + \overline{PQR} + \overline{P}QR$ .
4. Convert 25 to binary.
5. Define form factor & peak factor.
6. How do you define forward bias?
7. Write the logic symbol and truth table of OR gate.
8. Define subtractor. Write the expression for half subtractor.
9. Define flip flop. Mention its types.
10. What is the difference b/w full wave and half wave rectifier.
11. Find 2's complement of  $(10110010)_2$ .
12. Write the logic diagram of T flip flop.

## SECTION - B

Answer any 5 questions.

(5×10=50)

13. a) With a neat diagram explain resistance in parallel. (5)  
b) State & explain super position theorem. (5)

[P.T.O.]





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14. a) Describe Bohr's atomic model. (5)  
b) What is P-N junction explain? (5)
15. a) Solve using K-map  
 $F(A, B, C, D) = \sum(3, 5, 7, 8, 10, 11, 12, 13)$ . (6)  
b) Simplify the expression using demorgan's theorem  $\overline{XY + XZ} + \overline{XYZ}$ . (4)
16. a) Discuss full adder with necessary diagram and truth table. (5)  
b) "NOR gate is called universal gate". Justify. (5)
17. a) Explain the working of S-R flip flop. (4)  
b) Construct JK flip flop using NAND gate and explain. (6)
18. Short note on the following.  
a) Kirchoff's law. (5)  
b) Types of semiconductor. (5)
19. a) Explain error detection and correction code. (6)  
b) With a neat diagram explain parallel adder. (4)
20. a) Subtract  $(64)_{10}$  from  $(32)_{10}$  using 2's complement. (4)  
b) What is a register? Explain the working of SIPO register with necessary diagram. (6)



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I Semester B.C.A. Degree Examination, August - 2021

COMPUTER SCIENCE

Digital Electronics

(CBCS Scheme Freshers and Repeaters)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates :

Answers all the questions.

SECTION - A

Answer any Ten of the following questions.

(10×2=20)

1. Define the terms Short circuit and open circuit.
2. What is conduction band and forbidden band?
3. What do you mean by doping?
4. Differentiate between half wave rectifier and full wave rectifier.
5. Find the 2's complement of  $(1010011)_{(2)}$ .
6. Simplify the expression  $A\bar{B} + C + \bar{D}$ .
7. Write the truth table, logic Symbol and expression for XOR gate.
8. What is combinational logic circuit?
9. Write the truth table of full adder.
10. Give any two differences between latch and flip flop.
11. What is conductor and insulator?
12. What do you mean by Shift register?

SECTION - B

Answer any Five of the following.

(5×10=50)

13. a) Briefly explain voltage divider circuit. (5)  
b) State and explain Kirchoff's current Law. (5)
14. a) What is rectifier? Explain half wave rectifier. (5)  
b) Describe Bohr's atomic model. (5)
15. a) Write the difference between intrinsic and extrinsic Semi conductor. (5)  
b) Explain p-n junction with a neat diagram. (5)

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16. a) Convert  $(9c)_{16}$  into decimal and octal. (5)  
b) Subtract  $18_{(10)}$  from  $32_{(10)}$  using 2's complement method. (5)
17. a) Minimize the following SOP expression using K-map. (6)  
$$F(A, B, C, D) = \sum(2, 5, 7, 9, 11, 12, 15) + \alpha(3, 8, 13)$$
  
b) State and prove Demorgan's Theorem. (4)
18. a) Define Universal gate. Realize NOR as universal gate. (5)  
b) With a neat diagram and truth table explain the working of half adder. (5)
19. a) Define Flip Flop. Explain the working of RS flip flop with a neat diagram. (5)  
b) Briefly explain the operating characteristics of flip flop. (5)
20. a) Explain the working of SIPO shift register with the necessary diagram. (6)  
b) Write the applications of shift register. (4)

