I. Semester B.C.A. Examination, December 2018
(CBCS) (Fresh)
COMPUTER SCIENCE
Digital Electronics

Time: 3 Hours
Max. Marks: 70

Instruction: Answer all the Sections.

SECTION - A

I. Answer any ten of the following. (10×2=20)
1) State Ohm's law.
2) Define cycle and periodic time with respect to AC waveform.
3) What is biasing? Explain reverse bias.
4) Differentiate Fan-In and Fan-Out.
5) Define RMS value.
6) Find the 2's complement of (11010)₂.
7) Define min term and max term.
8) What is AND gate? Write its truth table and logic symbol.
9) What is sequential logic circuit? Give an example.
10) What is half adder? Write its logic circuit.
11) What is conductor and insulator?
12) Define shift register.

SECTION - B

II. Answer any five of the following questions. (5×10=50)
13) a) State and explain Norton's theorem. 5
   b) Explain Forward and Reverse bias. 5

P.T.O.
14) a) What is rectifier? Explain full wave rectifier.
    b) Explain Kirchhoff's current and voltage laws.

15) a) Differentiate intrinsic and extrinsic semiconductors.
    b) Mention and explain briefly about the applications of diode.

16) a) State and prove Demorgan's theorem with truth table.
    b) Simplify \( AB + A(B + C) + B(B + C) \) using Boolean algebra and draw logic circuit for the simplified equation.

17) a) Simplify the SOP minterm expression \( Y = \sum m(1, 5, 7, 8, 9, 13) + \sum d(3, 12) \) using K-map.
    b) Realize all basic gates by using NOR gate.

18) a) Explain Full Adder with truth table and logic circuit.
    b) What is multiplexer? Explain 4 x 1 multiplexer.

19) a) Explain master-slave JK Flip Flop with block diagram.
    b) Explain SISO shift register.

20) a) What is energy band? Explain all the three energy bands.
    b) Subtract \((29)_{10} - (7)_{10}\) using 2's complement method.