First Semester B.C.A. Degree Examination, December 2018

(CBCS – Semester Scheme)

Computer Science

Paper II – DIGITAL ELECTRONICS

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to Candidates : Answer all the Sections.

SECTION – A

Answer any **TEN** questions. Each question carries **2** marks :   **(10 × 2 = 20)**

1. Define the following terms (a) Atomic Number (b) Orbit.

2. What is a Network Port?

3. State two advantages of Superposition Theorem.

4. Define the following terms :

   (a) Leading terms

   (b) Lagging quantity

5. What are the electrons in the conduction band known as?

6. Define Peak Inverse Voltage (PIV) of diode.

7. Convert the following : $(2FE1.63)_{16}$ = (10)

8. Define the term sum term with example.

9. Give the truth table and logical expression for AND gate.

10. What is the draw back of Half Adder Circuit?

11. What is sequential circuit? Give example.

12. Differentiate between serial and parallel shifting registers.

65122

Answer any **FIVE** questions. Each question carries **10** marks : **(5 × 10 = 50)**

13. (a) State and explain Norton's theorem. **(5)**

    (b) State and explain Kirchoff's voltage law. **(5)**

14. (a) Explain the characteristic features of IC family gates. **(5)**

    (b) State and explain Bohr's atomic model. **(5)**

15. (a) Explain briefly p-n junction with a neat diagram. **(5)**

    (b) What is rectifier? Explain the types of rectifier in detail. **(5)**

16. (a) Simplify the following Boolean expression : **(5)**

    $AB + A\overline{B} + \overline{A}C + \overline{A}\overline{C}$.

    (b) Define Excess 3 code? Prove that unweighted Excess 3 code is a self complementing code. **(5)**

17. (a) State and prove Demorgan's theorem. **(5)**

    (b) Simplify using K-map : **(5)**

    $F(A, B, C, D) = \Sigma(0,1,3,5,9,12) + \Sigma d(2,4,6,7)$.

18. (a) Explain how NOR gate can be used as universal gate. **(5)**

    (b) Explain with an example, the working of a Decoder. **(5)**

19. (a) Explain briefly Half subtractor. **(5)**

    (b) Explain the working of JK Flipflop with logic diagram and truth table. **(5)**

20. (a) Explain the working of PISO register. **(5)**

    (b) Write a note on Shift Register. **(5)**