I Semester B.C.A. Degree Examination, November/December 2013
(F+R) (Y2K8 Scheme)
Computer Science
BCA 104 : DIGITAL ELECTRONICS

Time : 3 Hours

Max. Marks : 60/70

Instructions : 1) Answer **all** Sections.
2) Section **D** is applicable to students who have taken admission from **2011-2012** and onwards.

SECTION – A

I. Answer **any ten** questions. **Each** question carries **1** mark. **(1×10=10)**

1) State Kirchoff's voltage law.

2) What is bilateral network ?

3) Mention the three types of Energy Bands.

4) Define the term Doping.

5) Convert $(F5A)_{16}$ to octal.

6) Find the 2's complement of –34.

7) Define peak value.

8) What are combinational circuits ?

9) Write the truth table for EX-OR gate.

10) What is a flip-flop ?

11) Define Racing condition.

12) List the different types of shift registers.

SECTION – B

II. Answer **any five** questions. **Each** question carries **3** marks. **(3×5=15)**

13) State Ohms Law. Calculate the current flowing across a 3 Ω resistor with a voltage of 12 V power.

14) Briefly explain about Bohr's Atomic model.

15) With a neat diagram explain the operation of P-N junction diode.

16) Compare TTL with CMOS.

P.T.O.

17) State and prove De-Morgans theorems.

18) With diagram explain half subtractor.

19) Explain 4 to 1 Mux with diagram.

20) What is delay flip-flop ? Explain briefly.

SECTION – C

III. Answer **any five** questions. **Each** question carries **7** marks.   **(7×5=35)**

21) State and explain Thevenin's theorem.   **7**

22) a) Explain Intrinsic semiconductor.   **4**

    b) Compare half-wave and full-wave rectifier.   **3**

23) a) Explain forward bias condition in a diode with characteristic diagram.   **4**

    b) Write a note on IC families.   **3**

24) Simplify the following into SOP form using K-Map and realize using gates.   **7**
    $F (A, B, C, D) = \sum m (0, 1, 3, 8, 12, 13, 14) + \sum d (9, 15)$

25) Prove NAND and NOR gates as universal gates.   **7**

26) a) Explain the working of parallel binary adder with diagram.   **3**

    b) With the diagram explain decimal to BCD encoder.   **4**

27) a) Explain JK flip-flop with the logic diagram.   **4**

    b) How do you eliminate racing condition ? Explain.   **3**

28) Briefly explain the different types of shift registers.   **7**

SECTION – D

IV. Answer **any one** of the following. **Each** question carries **10** marks.   **(10×1=10)**

29) a) Explain half-wave rectifier with a neat diagram.   **5**

    b) Explain parity Generator and parity checker.   **5**

30) a) Explain the working of adder/subtractor with the diagram.   **5**

    b) What is RS flip-flop ? Explain clocked RS flip-flop.   **5**

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