



SN – 471

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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  $3 \Omega$  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.

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- 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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