NS – 617

14

I Semester B.C.A. Degree Examination, November/December 2016
(Repeaters) (Y2K8 Scheme)
BCA 104 : ELECTRONICS

Time : 3 Hours Max. Marks : 70/60

Instruction : *60 Marks is only for those admitted prior to **2011-12**. Section **D** is for those admitted from **2011-12** and onwards.*

SECTION – A

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

1) State Ohm's law.

2) What is a bilateral network ?

3) Define ripple factor.

4) What is rms value of the ac ?

5) Expand VLSI.

6) Represent $348_{(10)}$ in Excess – 3 code.

7) What is a bit ?

8) Write the truth table of Ex-NOR gate.

9) Draw the pin diagram of IC 7404.

10) What is sequential logic circuit ?

11) What is a flip-flop ?

12) What is forbidden state in a flip-flop ?

P.T.O.

SECTION – B

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

13) State and explain Kirchhoff's current law.

14) Explain the formation of n-type semiconductor.

15) Convert $503_{(10)}$ = _____(2) = _____(8) = _____(16).

16) State and prove De'Morgan's theorem.

17) What is a half-subtracter ? Write its truth table and logic circuit.

18) What is AND logic gate ? Write its truth table and pin diagram of IC 7408.

19) Explain the working of Master-Slave flip-flop.

20) What is T-flip-flop ? Realise T-flip-flop using JK-flip-flop.

SECTION – C

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

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

22) Write any four comparisons of conductors, insulators and semiconductors. **7**

23) With the circuit diagram and waveforms explain the working of full-wave rectifier. Give the expression for its efficiency. **7**

24) a) Explain the steps to subtract $101100_{(2)}$ from $111000_{(2)}$ using 2's complement method.

b) Find the binary equivalent of the Gray Code 110010. **(5+2)**

25) a) Convert :

$B4C5_{(16)}$ = _____(10) = _____(8) = _____(2).

b) Simplify the Boolean expression using K-map.

$$f(A, B, C, D) = \sum_{m}(0, 2, 6, 8, 10, 15) + \sum_{d}(7, 13, 14)$$ **(3+4)**

26) a) What is full subtracter ? Write its truth table, output expressions. Realise full subtracter using two subtracters.
b) What is BCD adder ? **(6+1)**

27) a) Explain the working of 4-bit parallel adder.
b) Draw the logic circuit of 4-bit adder/subtracter using IC 7483 and IC 7486. **(4+3)**

28) a) With the logic circuit and truth table, explain the operation of JK-FF.
b) What is a shift register ? Mention the types of shift registers. **(5+2)**

SECTION – D

IV. Answer **any one full** question : **(10×1=10)**

29) a) State and explain maximum power transfer theorem. **5**
b) Compare these logic families DTL, TTL and CMOS. **5**

30) a) List the properties of semiconductors. **5**
b) Write any three Boolean laws. **3**
c) Give the importance of clock in sequential circuits. **2**
