I Semester B.C.A. Degree Examination, Nov./Dec. 2017
(CBCS) (F+R)
(2014-15 and Onwards)
BCA 104 : DIGITAL ELECTRONICS

Time : 3 Hours

Max. Marks : 70

Instruction : *Answer all the Sections.*

SECTION – A

I. Answer **any ten** of the following questions : (10×2=20)

1) Define electric current and specify the expression for current.

2) What do you mean by active element and passive element ?

3) State Norton's theorem.

4) Define the terms Time Period and Frequency.

5) What is conduction band and forbidden band ?

6) What is doping ?

7) Find the 2's complement of 101110011.

8) Convert the binary number $1101011_{(2)}$ to gray code.

9) Show that $C + \overline{BC} = 1$.

10) Define encoder and decoder.

11) Write any two difference between Latch and flip flop.

12) What are the basic functions of shift register ?

SECTION – B

II. Answer **any five** of the following questions : (5×10=50)

13) a) Briefly explain the current divider circuit. 5

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

P.T.O.

14) a) State super position theorem and explain with an example.   5

b) Describe Bohr's atomic model.   5

15) a) Mention the differences between intrinsic and extrinsic semiconductor.   5

b) Briefly explain the working of bridge rectifier.   5

16) a) Convert $(BCA)_{16}$ to $(\ )_2$, $(\ )_8$, $(\ )_{10}$.   6

b) Subtract $29_{(10)} - 7_{(10)}$ using 2's complement method.   4

17) a) Simplify the given minterm expression using K-map.   6

$F = \Sigma m\,(1, 5, 7, 8, 9, 13\ ) + \Sigma d\,(3, 12)$.

b) State and prove De-Morgon's theorem.   4

18) a) What is universal gate ? Realize NAND as universal gate.   5

b) With a neat circuit diagram explain the working of Full Adder.   5

19) a) Design a 4 to 1 multiplexer circuit and explain.   5

b) Explain the working of clocked RS flip-flop with truth table.   5

20) a) Explain the working of 4 bit serial-in-parallel-out shift register.   5

b) What are the operating characteristics of Flip Flop ?   5

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