



SN – 657

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

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- 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

$$F = \sum m(1, 5, 7, 8, 9, 13) + \sum d(3, 12).$$
 b) State and prove De-Morgan'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
