



SS – 677

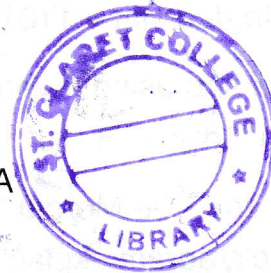
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I Semester B.C.A. Degree Examination, November/December 2018
(CBCS) (F+R) (2014-15 and Onwards)
COMPUTER SCIENCE
BCA-104T : Digital Electronics

Time : 3 Hours

Max. Marks : 70

Instruction : Answer all Sections.



SECTION – A

I. Answer **any ten** questions.

(10×2=20)

- 1) What is Semiconductor ? Give example.
- 2) What is meant by rectification ?
- 3) State and explain Ohm's law.
- 4) Define form factor and peak factor.
- 5) What is active element in an electric network ? Give example.
- 6) Expand ASCII and EBCDIC code.
- 7) Perform $(11101)_2 - (10101)_2$ using 2's complement.
- 8) Convert $(62.501)_{10}$ to octal and hexadecimal.
- 9) Convert (i) 10101 to graycode (ii) $(520)_{10}$ to hexadecimal.
- 10) Define a nibble and a byte.
- 11) What is the logic symbol and truth table for XOR gate.
- 12) What is a sequential circuit ? Explain.

SECTION – B

II. Answer **any five** of the following questions.

(5×10=50)

- 13) a) State and explain Super position theorem. 5
- b) Explain half-wave rectifier with a neat diagram. 5
- 14) a) List any two properties of semiconductor. Explain PN junction with a neat diagram. 5
- b) What are extrinsic semiconductors ? Explain the doping process. 5

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- 15) a) Explain any 5 important characteristics of Digital ICs. 5
b) Write a note on TTL and CMOS. 5
- 16) a) Convert the following :
i) Octal to decimal equivalent $(465.44)_8$
ii) Binary to decimal – 110100011. 5
- b) Simplify the sop using 4-variable K-maps. $F(a, b, c, d) = \sum m(0, 6, 7, 8, 9, 10, 12) + \sum d(2, 4, 5, 13)$. 5
- 17) a) State and prove De Morgan's theorem. 5
b) With a logic diagram explain 4 to 1 multiplexer. 5
- 18) a) Implement a full-adder with two half-adders and explain the full adder. 5
b) Explain the working of 4-bit parallel binary adder. 5
- 19) a) What is a T flip-flop ? How do you convert JK flip-flop to T-flip-flop ? 5
b) What is a shift register ? Explain the types of registers. 5
- 20) a) What are semiconductors ? Explain different types of semiconductors. 6
b) Explain error detection and error correction codes. 4
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