I Semester B.C.A. Degree Examination, March/April 2022
(Y2K14) (CBCS) (R)
COMPUTER SCIENCE
BCA-104T : Digital Electronics

Time : 3 Hours

Max. Marks : 70

Instructions : 1) Answer **all** Sections.
2) Section – **A** : Answer **any 10** questions.
3) Section – **B** : Answer **any 5** questions.

SECTION – A

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

1) What is node and junction ?

2) What is electric current ? Mention the unit of current.

3) What is energy band ? Mention the types of band.

4) Define the terms waveform and time period.

5) Convert $763.375_{(8)}$ to decimal.

6) Find 2's complement of binary number 10110010.

7) Mention the rules of logical addition.

8) Write OR gate logic symbol and its truth table.

9) Define combinational circuit with example.

10) What is half adder ? Write its logical expressions.

11) What is flip-flop ? Mention types of flip-flop.

12) What is shift register ? Mention types of shift registers.

SECTION – B

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

13) a) Explain series-parallel circuit. 5

b) Explain Thevenin's theorem in detail. 5

14) a) Differentiate intrinsic and extrinsic semiconductors. 5

b) Explain p-n junction with a neat diagram. 5

15) a) Briefly explain the working of full wave bridge rectifier.   5

    b) Write a note on TTL and CMOS.   5

16) a) Convert $4632.51_{(8)} = ()_2$ and $F6.E2_{(16)} = \underline{\hspace{1cm}}_{(10)}$.   4

    b) Simplify the given minterm expression using k-map
$$F = \Sigma m\ (1, 5, 7, 8, 9, 13) + \Sigma d\ (3, 12).$$ 6

17) a) State and prove Demorgan's theorem.   6

    b) Subtract $25_{(10)} - 16_{(10)}$ using 2's complement.   4

18) a) What is universal gates ? Explain NOR as universal gate.   5

    b) Write a note on multiplexer and half subtractor.   5

19) a) With a neat circuit diagram explain the working of full adder.   5

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

20) a) Explain SISO and PIPO shift register.   7

    b) Write a note on 2-to-4 decoder.   3

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