

Roll No.

E-3696

B. Sc. (Part II) EXAMINATION, 2021

INFORMATION TECHNOLOGY

Paper First

(Digital Circuits and Computer Hardware)

Time : Three Hours]

[Maximum Marks : 50

Note : Answer all the *five* questions. *One* question from each Unit is compulsory. All questions carry equal marks.

Unit—I

1. Convert the following :

(a) $(101101)_2 = ()_{10}$

(b) $(1111011)_2 = ()_{16}$

(c) $(16A)_{16} = ()_2$

(d) $(85)_{10} = ()_2$

(e) $(D6C1)_{16} = ()_{10}$

Or

Plot and simplify the K-map for the following :

$$F(A, B, C, D) = \sum m(0, 1, 4, 5, 11, 14, 15)$$

P. T. O.

[2]

Unit—II

2. Explain SR and JK flip-flop with block diagram and truth table.

Or

Explain the working of full adder and half adder with block diagram and truth table.

Unit—III

3. Explain the following :

- (i) RTL
- (ii) DTL
- (iii) TTL

Or

What is Multivibrator ? Explain the working of monostable multivibrator with circuit diagram.

Unit—IV

4. Draw the block diagram of CPU and briefly explain each part.

Or

Explain different features of input-output organisation.

Unit—V

5. (a) Explain Cache memory and hit ratio.
(b) Explain associative memory.

Or

Explain main memory and auxiliary memory.