Bachelor of Science (B.Sc. I.T.) Semester–II (C.B.S.) Examination

FUNDAMENTALS OF DIGITAL ELECTRONICS

Paper—I

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw a well labelled diagrams wherever necessary.

EITHER

1. (a) What is number system ? Which number system is the best suitable for computer ? Why ? Explain. 5

(b) Do as directed :

(i) $(21F_3)_{16} = (?)_2$

(ii) $(146.10)_{10} = (?)_8$ 5

OR

(c) Explain how positive and negative numbers are represented in binary with suitable example. 5

(d) What is parity ? What are its types ? How it is useful for detection of error in data ? 5

EITHER

2. (a) What are the different basic gates ? Explain each of them with their truth table and symbols. 5

(b) Explain how NOR gate can be used to construct different gates. 5

OR

(c) What is K-map ? Simplify the following equation using K-map :

$f(A, B, C, D) = \sum m\ (0, 1, 4, 6, 9, 12, 13, 15)$ 5

(d) State and prove DeMorgon's theorem. 5

EITHER

3. (a) Explain the construction and working of 4 bit parallel adder with example. 5

(b) What is decoder ? Explain the construction and working of 3:8 decoder using gates. 5

OR

(c) What is D-flip-flop ? Explain the construction and working of D-ff using logic gates. Why it is called D-latch ? 5

(d) Explain the construction and working of 3 bit down counter with timing diagram. 5

EITHER

4. (a) Give the detail classification of memory with one example of each. 5

(b) What is Cache memory ? Explain. 5

OR

(c) Explain the working of dot matrix printer in detail. 5

(d) What is optical disk ? Explain how data is recorded on it. What are its advantages ? 5

5. Attempt **All** :

(a) Write a short note on ASC II code. 2½

(b) Draw the logic diagram of Ex-NOR gates using basics gates and give its truth-table. 2½

(c) Differentiate between synchronous and asynchronous counter. 2½

(d) What is primary and secondary memory ? Explain. 2½