Bachelor of Science (B.Sc. I.T.) Semester—II Examination

FUNDAMENTALS OF DIGITAL ELECTRONICS

Paper—I

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory.

(2) Draw a well labelled diagram wherever necessary.

EITHER

1. (A) Explain the method to convert the real decimal number into binary with suitable example. 5

(B) Explain the various methods to represent the negative binary numbers. 5

OR

(C) Explain the weighted and unweighted binary codes. State the advantages of weighted codes. 5

(D) Do as directed :

(i) $(11001)_{binary} = (\ )_{Grey}$

(ii) $(1001)_{binary} = (\ )_{\times 3}$

(iii) $(175.2)_8 = (\ )_{10}$

(iv) $(121)_{10} = (\ )_{16}$

(v) $(134)_{10} = (\ )_{BCD}$ 5

EITHER

2. (A) Explain XOR and XNOR gates using logic circuit and truth table. 5

(B) What is K-Map ? State rules for simplification and expression using K-Map. 5

OR

(C) Solve by using K-Map :

$f(A, B, C, D) = \Sigma m(0, 1, 2, 3, 8, 9, 10, 11)$. 5

(D) State and prove DeMorgan's theorem using logic gates. 5

EITHER

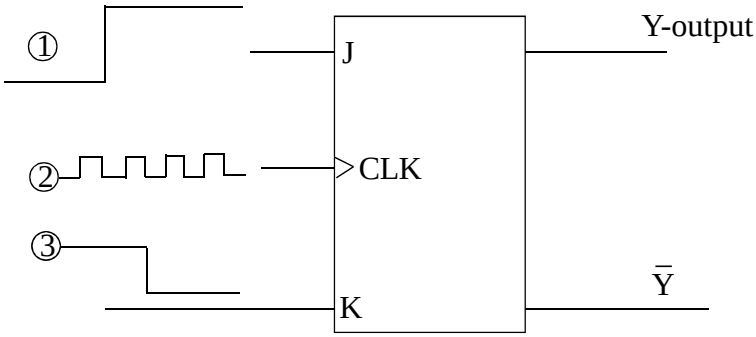
3. (A) Explain the working of 4 : 1 MUX. Design 4 : 1 MUX using 2 : 1 MUX. 5

(B) Explain the working of binary counter with suitable diagram. 5

OR

(C) What is race around condition ? How it is eliminated ? Explain. 5

(D) Explain RS Flip-Flop using NOR gate. Draw the waveform at Y output. 5



EITHER

4. (A) Classify the memory on the basis of speed and storage. Explain. 5

(B) Explain the construction and working of Hard Disk. 5

OR

(C) Explain any two I/O devices. 5

(D) Explain the fastest memory used in the computer. 5

5. (A) Explain alphanumeric code. 2½

(B) Standardise the given expression for K-Map :

(i) AB + BC

(ii) $(A + \overline{B})(\overline{B} + C)$. 2½

(C) What is shift register ? Explain 3-bit left shift register. 2½

(D) Explain static RAM. 2½