

1209-13-474-022

Code No. 2045

**FACULTY OF SCIENCE****B.Sc. III Year Examination, March / April 2016****Subject: ELECTRONICS****Paper – III : Digital Electronics and Microprocessor****Time : 3 Hours****Max.Marks : 100****Note: Answer all questions from Part – A and any four questions from Part – B.****PART – A (4x20 = 80 Marks)****(Essay Answer Type)**

- 1 a) Explain how NAND gate produces OR, AND, NOT operations. 8  
b) Discuss the features and action of the following logic circuits. 12  
(i) TTL logic circuit (ii) CMOS logic circuit  
**OR**  
c) Add: (i)  $111_2 + 111_2 + 111_2$  (ii)  $1011.11_2 + 1011.01_2$  8  
d) Minimise the four variable logic function using K-map  
 $f(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$  12
- 2 a) Explain the action of 3 bit Full Adder Circuit. 10  
b) Discuss the working of different types of shift registers. 10  
**OR**  
c) Draw the circuit of JK Master Slave Flip Flop and explain its action. 12  
d) Explain the action of DeMultiplexer circuit. 8
- 3 a) Explain with a neat diagram the internal architecture of INTEL 8085  $\mu p$ . 15  
b) Discuss the various addressing modes of 8085  $\mu p$  with relevant examples. 5  
**OR**  
c) Write an ALP to find the largest number in a data array. 12  
d) Define instruction cycle, machine cycle, fetch and execute cycles. 8
- 4 a) Draw the block diagram of 8255 PPI and briefly explain the features of its different modes of operation. 12  
b) Explain the organization of semiconductor memory. 8  
**OR**  
c) Explain the principle and action of successive approximation A/D converter. 15  
d) Discuss the performance parameters of D/A converters. 5

**PART – B (4x5 = 20 Marks)****(Short Answer Type)****Note: Answer any four questions.**

- 5 Convert  $142_{10}$  into binary and hexadecimal.  
6 Discuss the characteristics of logic families.  
7 Explain the features of different semiconductor memories.  
8 Draw and explain the action of Half Adder Circuit.  
9 Explain the conditional flags of 8085  $\mu p$ .  
10 Write an ALP to perform decimal addition of two 8 bit numbers.  
11 Discuss the salient features of stepper motor.  
12 Explain the features of various hardware interrupts of INTEL 8085  $\mu p$ .

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