

Roll No. ....

Total Pages : 03

**BT-3/D-23**

**43168**

**DIGITAL ELECTRONICS AND  
LOGIC DESIGN  
ES-217A**

Time : Three Hours]

[Maximum Marks : 75

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit.

**Unit I**

1. (a) Convert the following binary number in Decimal and Hexadecimal numbers : 5
  - (i) 110.1010
  - (ii) 10101
- (b) Perform the following operations using 1's complement : 5
  - (i)  $36 - 23$
  - (ii)  $23 - (-15)$
- (c) Explain the conversion of OR operation into AND operation with the help of demorgan theorem. 5
2. (a) Draw the logic diagram of 4 bit binary to grey code convertor. Explain the conversion method of binary code to grey code with the help of an example. 7

- (b) Minimize the expression using K-Map :  
 $F = \Sigma(1, 2, 5, 6, 8, 9, 10) + d(3, 7, 15)$ . Also realize the obtained expression using AOI logic. 8

## Unit II

3. (a) State and explain the working of BCD adder with its logic diagram. 10  
(b) Design an octal to binary encoder. 5
4. (a) What do you mean by multiplexer ? Explain the working of  $n : 1$  mux. Implement the given expression using  $8 : 1$  MUX  $F(A, B, C, D) = \Sigma(0, 1, 2, 4, 9, 10, 12, 15)$ . 10  
(b) Design a 3 bit odd parity generator. 5

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## Unit III

5. (a) Explain the working of SR flip flop. Explain the problem associated with SR flip flop. 8  
(b) Convert D flip flop in T flip flop. 7
6. (a) Design an asynchronous decade counter. Use J-K flip flop for designing the counter. 8

- (b) What do you mean by register ? Draw and explain the logic diagram of serial in serial out shift right register. 7

#### Unit IV

7. Explain about specifications of Digital to Analog converters. Explain working of weighted resistor. Digital to Analog Converter. 15
8. (a) Describe working of Flash type ADC. 7
- (b) What is PAL ? How is it different from PLA ? 8



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