

Total No. of Questions : 4]

SEAT No. :

P-5382

[Total No. of Pages : 2

[6186]-508

**S.E. (Electrical Engineering) (Insem.)**  
**ANALOG AND DIGITAL ELECTRONICS**  
**(2019 Pattern) (Semester - III) (203143)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Make suitable assumptions, if necessary.*

**Q1) a)** Explain With One Example Each Minterm and Maxterm. **[5]**

b) Design a Half Adder Circuit With Truth Table And K-Map. **[5]**

c) Simplify the Following Algebraic Expression Using Boolean, Theorems  $F(A, B, C) = (A + B)(A + C)$  **[5]**

OR

**Q2) a)** With the Help of K-Map Reduce the Following Algebraic Expression.  $F(A, B, C, D) = \sum M(0, 1, 2, 5, 7, 8, 9, 10, 13, 15)$ . **[5]**

b) Mention the Types of Encoders, Enlist Any Two Applications of an Encoder. **[5]**

c) Design a 3 : 8 decoder and Draw Its Logic Diagram. **[5]**

**Q3) a)** Design A Mod 2 Asynchronous Up Counter. **[5]**

b) With Neat Diagram Explain Ring Counter. **[5]**

c) What Is A Shift Register? List its Types and Draw the Data Movement Block Diagram. **[5]**

OR

**P.T.O.**

- Q4)** a) Draw the Timing Diagram For Mod3 Synchronous Down Counter. [5]
- b) Design A Mod 10 Asynchronous Counter. [7]
- c) List The Steps Required For Designing A Counter. [3]

#####