

Enrolment Number: \_\_\_\_\_

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.TECHMIDSEM EXAMINATION**  
**3<sup>rd</sup> SEMESTER**  
**ACY-2021-22 (EVEN SEM)**

Digital System Design (203107203)

Branch: EC

Date: 08/08/2022

Time: Total Marks: 40

Sr.No.		Marks
Q.1	(A) 1. Give SOP representation of binary combination 1101. 2. State distributive law. 3. According to boolean law: $A + 1 = ?$ 4. State Duality theorem. 5. Define Combinational Circuit. Give examples of combinational Circuit. (B) Design BCD to Excess-3 Code Convertor.	05       05
Q.2	Attempt any four (Short Questions)  (1) State and prove Demorgan's Laws. (2) Simplify using K-Map: $F(A, B, C, D) = \sum m(2, 5, 7, 10, 13, 15) + d(0, 8)$ (3) Perform BCD Addition: $8 + 4$ (4) Define Multiplexer. Draw truth table and internal logic circuit of 4 X 1 MUX. (5) Draw truth table and Logic Circuit of Full subtractor.	12
Q.3	Attempt any two  (1) Draw Serial Adder and explain its working. (2) a) Convert binary 101110110101 to gray code. b) Convert gray 010100011101 to binary code. c) Excess-3 code for 81.61 is? d) Write ASCII code of number 5 and 9. (3) Explain 2 Bit Comparator	08
Q.4	(A) Define Decoder Combinational Circuit and explain 2:4 line Decoder. (B) List out types of Encoders. Explain Octal to Binary Encoder.  OR  (B) Explain BCD Adder.	05 05   05