

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Supplementary Examination – Summer 2023 Course : B.Tech Branch : Electronics and Communication Engineering (Sandwich) Semester : III Subject Code and Name : Digital Circuits and Microprocessor (BTEX305S) Max Marks : 60 Date : 21-08-2023 Duration : 3 Hrs.			
Instructions to the students: 1. All the questions are compulsory 2. The level of question /expected answer as per OBE or the course outcome (CO) on which the question is based is mentioned in () in front of the question 3. Use of non-programmable scientific calculator is allowed. 4. Assume suitable data wherever necessary and mention it clearly			
Q.1	Answer any two of the following	(CO)	Marks
A)	Design basic gates with the help of universal logic gates.	CO1	6
B)	Simplify following expression using K Map $F(A,B,C,D) = \sum m(1,4,7,12,13,14,15) + d(0,5,8)$	CO1	6
C)	Implement the following functions using demultiplexer $F_1 (A,B,C) = \sum m (0,3,7)$ $F_2 (A,B,C) = \sum m (1,2,5)$	CO1,2	6
Q.2	Answer any two of the following		
A)	Distinguish between combinational and sequential logic circuits	CO2	6
B)	Write a short note on D flip flop and T flip flop	CO1,2	6
C)	Explain the operation of a ring counter	CO2	6
Q.3	Answer any two of the following		
A)	Draw the state diagram for 1) D flip flop and 2) J K flip flop	CO3	6
B)	Draw and explain the block diagram of Mealy Model and Moore Model	CO2	6
C)	Design a sequence generator for sequence $0 \rightarrow 1 \rightarrow 3 \rightarrow 4 \rightarrow 6 \rightarrow 0$	CO4	6
Q.4	Answer any two of the following		
A)	Explain the operation of CMOS inverter	CO4	6
B)	Explain with neat diagram CMOS NAND gate.	CO4	6
C)	Compare CMOS and TTL logic family	CO4	6
Q.5	Answer any two of the following		
A)	Explain the architecture of 8086 microprocessor.	CO5	6
B)	Explain the various addressing modes of 8086.	CO5	6
C)	What are different types of instructions used in 8086 microprocessor.	CO5	6