

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Winter Examination – 2022 Course: B. Tech. Branch : Electronics & Telecommunication Semester :VII Subject Code & Name: BTEXPE504B & VLSI Design & Technology Max Marks: 60 Date:08/02/2023 Duration: 3 Hr.			
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 calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly.			
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	What are the different sequential statements used in VHDL? Discuss them in brief.	CO1	6
B)	Explain structural, behavioral and data flow modelling in VHDL.	CO1	6
C)	Explain the architecture of Xilinx or Altera CPLD.	CO2	6
Q.2	Solve Any Two of the following.		12
A)	Write a VHDL code for priority encoder using if-then-else statements.	CO1	6
B)	What is Clock skew? How it can be avoided?	CO3	6
C)	A combinational circuit is defined by the following function $F1(A,B,C) = \sum (4,5,7)$ $F2(A,B,C) = \sum (3,5,7)$ Implement the circuit using PLA.	CO2	6
Q. 3	Solve Any One of the following.		12
A)	Explain the following in brief. i) PROM ii) PLA iii) PAL	CO2	6
B)	Explain CMOS inverter with its DC transfer characteristics.	CO4	6
C)	What is mean by power optimization? State and explain different types of power distribution techniques in brief.	CO3	6
Q.4	Solve Any Two of the following.		12
A)	Explain the importance of design for testability.	CO6	6
B)	Explain and derive the expressions for MOS transistor parameters g_m , g_{ds} and w_0 .	CO4	6
C)	Write short note on current sink and current source.	CO5	6

Q. 5	Solve Any One of the following.		12
A)	Discuss different fault models in detail.	CO6	6
B)	Draw Push-pull inverters. Explain it in detail.	CO5	6
C)	What is JTAG in VLSI? Explain why JTAG used in DFT.	CO6	6
	*** End ***		

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