Time: 3 Hrs **Max. Marks: 80**

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Q. 1.	**Solve any four Questions out of five**	
A	Perform the following conversion i) $(7436)_8 = (?)_2 = (?)_{16}$ ii) $(C0DE)_{16} = (?)_{10} = (?)_8$	[5]
B	Write entity declaration constructs in VHDL for AND, OR, NOT and EX-OR gates.	[5]
C	Compare between Static and Dynamic RAM.	[5]
D	Convert S-R flip flop to J-K flip flop.	[5]
E	If $F(A,B,C,D) = \sum m(0,3,7,13,14,15) + d(1,6)$ with its truth - table and express F in SOP form also draw the circuit diagram.	[5]
Q. 2.	**Solve the following**	
A	Implement the following function using, i) NAND gate ii) NOR gate Y = (A + BC) (B + $\bar{C}$ A)	[10]
B	Convert the following into, Octal, Binary, BCD, Excess -3 i) $(396)_{10}$ ii) $(4096)_{10}$	[10]
Q.3.	**Solve any Two Questions out of Three**	
A	Design a Gray- to-Binary code converter	[10]
B	Explain the operation of twisted ring counter with neat diagram	[10]
C	Design full subtractor using half subtractor	[10]
Q. 4.	**Solve the following**	
A	Explain Universal Shift register with neat diagram.	[10]
B	Design a BCD – to – Excess 3 code converter using PLA	[10]
Q. 5.	**Solve the following**	
A	Draw and explain 4- bit Johnson counter	[10]
B	Draw and explain master-slave J-K Flip Flop with neat diagram and truth table	[10]
Q. 6.	**Solve the following**	
A	Define and explain the following terms in case of logic families: i) Figure of merit ii) Fan-Out iii) Current and Voltage parameters iv) Noise Immunity	[05]
B	Minimize the following logic function F(A, B,C, D) = (AB$\bar{C}$ D + $\bar{A}$BCD + $\bar{A}\bar{B}\,\bar{C}$ + $\bar{A}\bar{B}\,\bar{D}$ + $A\bar{C}$ + $A\bar{B}C$ + $\overline{B}$	[05]
C	Simplify the following expression using Boolean algebra Y (A,B, C) = Σm(0,1,2,3,4,5,6,7)	[05]
D	Compare Moore and Mealy Machine with neat Diagram	[05]

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