

Exam.Code:0933

Sub. Code: 6659

2063

B.E. (Electrical and Electronics Engineering)

Third Semester

PC-EE-304: Digital Electronics

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

Q.1a)	Distinguish decoder and demultiplexer.	(2×5)
b)	Define 'race condition' in flip-flops.	
c)	Explain with suitable logic diagram, carry look ahead adder.	
d)	Differentiate the combinational logic circuit and sequential logic circuit.	
e)	Discuss the differences between programmable device and ROM.	
Section A		
Q.2a)	Implement the given function using NAND gates only. $F(X, Y, Z) = m(0,6)$.	(4)
b)	Explain Johnsons ring counter with an example.	(3)
c)	Realize the circuit for Ex-NOR using only four NOR gates.	(3)
Q.3a)	Explain with suitable logic diagram, carry look ahead adder. Design and implement one bit comparator.	(5)
b)	Compare TTL and CMOS logic families on the basis of following: i) Propagation delay ii) Power dissipation iii) Fan-out iv) Basic gate	(5)
Q.4a)	Describe the working of Master slave JK flip flop with truth table and logic diagram.	(5)
b)	Minimize the Boolean expression $F=AB'C'+C'D+BD'+A'C$ using K-map and implement the logic circuit using NAND gates only.	(5)
Section B		
Q.5a)	For a particular 8-bit ADC, the conversion time is 9 μ s. Find the maximum frequency of an input sine wave that can be digitized.	(5)
b)	Explain the operation of Successive approximation ADC.	(5)
	List the draw backs of Binary weighted Resistor technique D/A conversion.	
Q.6a)	Explain the working of a three-bit R-2R ladder DAC.	(4)
b)	An 8 bit successive approximation type ADC is driven by a 1.5MHz clock. Find the conversion time.	(3)
c)	Differentiate the DAC and ADC in terms of working principle and their applications.	(3)
Q.7a)	Explain Architecture and applications of FPGA in detail.	(5)
b)	How PLAs are used to implement combinational and sequential logic circuits? What are the draw backs of PALs?	(5)

x-x-x

