

HALL TICKET NUMBER

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PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE  
(AUTONOMOUS)

II B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL - 2023  
DIGITAL ELECTRONICS  
(Common to CSIT,IT Branches)

Time: 3 hours

Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.	Questions	Marks	CO	KL
1	a) Given the two binary numbers X=1010100 and Y=1000011, perform the subtraction X-Y	[2M]	1	3
	b) Simplify the Boolean function $F=x'y'z + x'yz + xy'$	[2M]	2	2
	c) Simplify the following logical expression using Karnaugh map $F=A'C+A'B+AB'C+BC$	[2M]	3	4
	d) Define carry generator?	[2M]	4	1
	e) Compare PAL and PLA.	[2M]	5	2

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.	Questions	Marks	CO	KL
UNIT-I				
2.	Convert the following numbers into binary and convert to gray code (AB33) <sub>16</sub> (ii) (3323) <sub>8</sub>	[10M]	1	3
OR				
3.	Convert the following to Decimal and then to octal. (i) (125F) <sub>16</sub> (ii) (10111111) <sub>2</sub>	[10M]	1	2
UNIT-II				
4.	Convert the given expression in standard SOP form i) $f(A,B,C)=A+AB+CB$ ii) $f(P,Q,R)=PQ+R+PR$	[10M]	2	2
OR				
5.	Prove that $AB'C + B + BD' + ABD' + A'C = B + C$ .	[10M]	2	2
UNIT-III				
6.	Minimize the expression $Y=AB'C+A'B'C+A'BC+AB'C'+A'B'C'$	[10M]	3	6
OR				
7.	Discuss about the following: i) Magnitude Comparator    ii) Karnaugh's Map	[10M]	3	1
UNIT-IV				
8.	Implement the following function using 4:1 multiplexer $F(A,B,C)=\sum(1,2,3,4,5)$	[10M]	4	2
OR				
9.	a) Design and draw a full adder which will use two half adders	[5M]	4	6
	b) Define decoder. Construct 3x8 decoder using logic gates	[5M]	4	1
UNIT-V				
10.	Explain with suitable example Programmable Logic Array (PLA) ,Programmable Array Logic (PAL)	[10M]	5	1

OR					
11.		Implement the following two Boolean functions with a PLA: $F_1(A, B, C) = \sum m(0, 1, 2, 4)$ , $F_2(A, B, C) = \sum m(0, 5, 6, 7)$	[10M]	5	1

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