Total No. of printed pages = 3

(a)

(c)

3 inputs and 3 outputs

2 inputs and 2 outputs

BCA 171203										
Rol	l No.	of ca	ndidate 20	BINA CHOWDHURY CENTRAL LIBRARY (GIMT & GIPS) Azara, Haikhowapara Guwahati – 781017						
B.C.A. 2nd Semester End-Term Examination										
DIGITAL LOGIC										
Full	l Mar	·ks –	70		Time – Three hours					
		Tl	ne figures in the margin indica	ate fu	ll marks for the questions.					
			Question No. 1 compulsory,	answ	ver any four from rest.					
1.	1. Answer the following questions by choosing the correct option: $(10 \times 1 = 10)$									
	(i) Given the numbers $A = 15_{10}$, $B = F_{16}$, $C = 17_8$, $D = 1111_2$. Find the Corre									
		stat	ement							
		(a)	A > B > C > D	(b)	A < B < C < D					
		(c)	A = B = C = D	(d)	None of these					
	(ii)	Whi	ch is not an Universal gate?							
		(a)	NAND	(b)	EOR					
		(c)	NOR	(d)	All the above					
	(iii)	Con	aplement of $(x+y)$ is							
		(a)	x'y'	(b)	x'+y'					
		(c)	xy	(d)	None of the above					
	(iv)	Full	adder has							

(b)

(d)

3 inputs and 2 outputs

None of the above

(v)	The	The Odd parity bit for 11111111 is						
	(a)	1	(b)	0				
	(c)	-1	(d)	None of the above				
(vi)	Which is used as alphanumeric code?							
	(a)	ASCII	(b)	Binary				
	(c)	8421	(d)	Hex				
(vii)	Whi	Which is not a reduction method of Boolean algebra?						
	(a)	De-Morgans Theorem	(b)	Karnaugh's Map				
	(c)	Quine- McClusky method	(d)	All the above				
(viii	lines							
	(a)	8	(b)	9 (GIMT & GIPS)				
	(c)	10	(d)	11 Guwahati – 781017				
(ix)	Hamming code is							
	(a)	SEC-DED code	(b)	Only Error correction code				
	(c)	Only Error detection code	(d)	None of the above				
(x)	111.	11 ₂ equal to						
	(a)	$(11111)_2 \times 2^{-2}$	(b)	$(11111)_2 \times 2^{-3}$				
	(c)	$(11111)_2 \times 2^{-1}$	(d)	None of the above				
(a)								
(b)	Convert -128 into 32 bit IEEE floating point representation.							
(c)	Simplify using 2's complement							
	(-32)+(-20)							
(d)	Con	vert the hexadecimal number A	er ABCD ₁₆ into binary and Octal. (3)					
(a)		Define Boolean algebra and the prove that for a Boolean variable X , $X + X = X$. (5)						
(b)	Design a four bit binary parallel adder using Full Adders. (5)							
(c)	Represent the boolean function $F(ABC) = A'B'C' + ABC$ using NAND							
	gate	s.		(5)			
	(vi) (vii) (viii) (ix) (x) (a) (b) (c) (d) (a) (b)	(a) (c) (vi) Whi (a) (c) (vii) Whi (a) (c) (viii) To a line (a) (c) (ix) Han (a) (c) (x) 111 (a) (c) (x) 111 (a) (c) (x) Con (a) Reprisign (b) Con (c) Sim (-32 (d) Con (a) Defi X+ (b) Desi (c) Repri	 (a) 1 (c) -1 (vi) Which is used as alphanumeric code (a) ASCII (c) 8421 (vii) Which is not a reduction method of a De-Morgans Theorem (c) Quine-McClusky method (viii)To address 1000 memory locations lines (a) 8 (c) 10 (ix) Hamming code is (a) SEC-DED code (b) Only Error detection code (c) (11111)₂ × 2⁻² (d) (11111)₂ × 2⁻¹ (e) Represent the largest and the stand signed binary number representation (d) Convert -128 into 32 bit IEEE float (e) Simplify using 2's complement (-32)+(-20) (d) Convert the hexadecimal number A Define Boolean algebra and the X + X = X. (b) Design a four bit binary parallel address 	(a) 1 (b) (c) -1 (d) (vi) Which is used as alphanumeric code? (a) ASCII (b) (c) 8421 (d) (vii) Which is not a reduction method of Boolean algebra and the protox X + X = X. (b) Design a four bit binary parallel adder use. (a) 1 (vii) Which is not a reduction method of Boolean algebra and the single districts of the boolean function F	(a) 1 (b) 0 (c) -1 (d) None of the above (vi) Which is used as alphanumeric code? (a) ASCII (b) Binary (c) 8421 (d) Hex (vii) Which is not a reduction method of Boolean algebra? (a) De-Morgans Theorem (b) Karnaugh's Map (c) Quine-McClusky method (d) All the above (viii) To address 1000 memory locations minimum no of bits required in address lines (a) 8 (b) 9 SINA CHOWDHURY CENTRAL LIBRARY (GIMT & CIPS) AZAR, Helkhowapera (GIMT & CIPS) (GI			

- 4. (a) Represent the following Boolean function using a Decoder and OR gates. (6) $F(A, B, C) = \sum (0, 1, 2, 3)$ F(A, B, C) = AB + A'B'.
 - (b) Draw the circuit diagram for Clocked SR flip flop and describe its working principle. (9)
- 5. (a) Reduce the Boolean function using Karnaugh's map and represent the Boolean function using AND-OR Gates. (9) $F\left(WXYZ\right) = \Sigma\left(0, 2, 5, 6, 12, 14, 15\right)$
 - (b) Represent the following Boolean function using Multiplexer taking C as input and AB as Select lines.
 (6) F(A, B, C, D) = Σ(1, 2, 3, 4, 9, 10, 10, 11, 12)
- 6. (a) What is the difference between combinational circuit and a sequential circuit? Draw block diagrams for each. (6)
 - (b) Design a Counter which gives following sequence 0, 1, 3, 5, 7. (9)
- - (a) Binary Cell

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- (b) BCD Adder
- (c) Characteristics table of JK flip flop
- (d) Character codes.