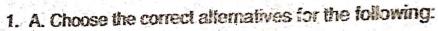
Group - A

(Multiple Choice Type Questions)



i)
$$(A+A'B+B')$$
 is equal to

a) A

b) B'

√c) 1

0 (0

ii) (10110) is equivalent to

a) 20

√b) 22

d) 18

iii) A BCD counter is an example of.

a) a decade counter

Yc) both (a) and (b)

b) a full modules counter

d) none of these

iv) The output of a gate is LOW if and only if all its inputs are HIGH. It is true for

√b) XNOR

c) NOR

d) NAND

v) De-Morgan's law states that

$$\sqrt{a}$$
 $(A+B)'=A'\cdot B'$

c)
$$(A \cdot B)' = A' \cdot B'$$

b)
$$(A+B)' = A'+B'$$

d) both (a) and (c)

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vi) The complement of	a variable is always		
a) 0		b) 1	
c) equal to the variable		√d) the inverse of the variable	
vii) 2's complement of	f 101011' is		
a) 010100	b) 010011	c) 101001	√d) 010101
a) ululuu	DJOTOOTT	0) 10100	
viii) What is the ASCI	code of 'A'?		d n dahaan
a) 98	b) 0100	c) 1100	√d) none of these
ix) 4-bit resister can s	tore	b) a byte at a time	
a) a bit at a time		d) none of these	
√c) a nibble at a time		oj noto otrata	
	IV Elio Elon	261	
x) In toggle state of	t is opposite of previous	output b) present outp	ut is same as previous output
		d) none of thes	
√c) both (a) and	1 (p)	4)	
xi) Full adder can ad	d		
a) two binary nu		b) three binary numbers	
c) four binary numbers		√d) none of these	
Cylour binary no			
xii) MOD-10 counter	can count upto		n of those
a) 9	√b) 10	c) 8	d) none of these
		Group - B	
	(Short At	swer Type Questions)	
2. State and prove L	De-Morgan's theorems.	swer Type Question No. 4.	
See Topic: BOOLEA	N ALGEBRA, 2019		
o Everage the Book	ean function F= AB+AC	in a product of maxterm	form.
Son Tonic: ROOLEA	N ALGEBRA, Short An	swer Type Question No. 7	
Miles and the second se			
4. Define multiplexe	r. Why is it called "Data	Selector !	on No. 1.
See Topic: COMBIN	IATIONAL CIRCUIT, S	short Answer Type Questi	
	logic	nates to design a full add	ler.
5. Use 4:1 MUX and	1 other necessary logic	gates to design a full add Short Answer Type Questi	on No. 6.
See Topic: COMBIN	IATIONAL CIRCUIT,		
Crost are	What is meant by race	condition?	
6. What is hip-hop:	OP, Short Answer Type	Question No. 5.	
See Topic: FLIF-FL		Group – C	
		O	
	(Long A)	following Boolean fun	ction and obtain minimal SO
7. a) Using K-map	p method. Simplify the	(0 10 11 15)	
expression: $Y = \Sigma$	$m(0, 2, 3, 6, 7) + \sum d$	(0, 10, 11, 15).	
		CA DE 120	

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b) Implement the Boolean Function:

 $F = (A, B, C, D) = \sum m(0, 1, 3, 8, 9, 15)$ using two 4- to-1 multiplexer and one OR gate.

- c) Design a gray code to binary converter circuit of 5 bits. What is nibble?
- a) See Topic: KARNAUGH MAP, Long Answer Type Question No. 2.
- b) See Topic: COMBINATIONAL CIRCUIT, Long Answer Type Question No. 11.
- c) See Topic: COMBINATIONAL CIRCUIT, Long Answer Type Question No. 12.
- 8. a) Design a half adder circuit using minimum number of 2-input NOR gates only. Write Down the truth table and Boolean functions also.
- b) Convert a D flip-flop to a J-K flip-flop. You can use additional circuiting if required.
- c) What is full subtractor? Explain its basic structure with proper logic diagrams and truth tables.
- a) See Topic: ARITHMETIC CIRCUIT, Long Answer Type Question No. 4.
- b) See Topic: FLIP-FLOP Long Answer Type Question No. 12(b).
- c) See Topic: ARITHMETIC CIRCUIT, Long Answer Type Question No. 3.
- 9. a) convert the following:

i)
$$(AC15)_{16} = (?)_{10}$$

ii)
$$(1011001)_2 = (?)_{10}$$

- b) Discuss about the design of an odd parity generator.
- c) Explain the concept of parity checking.
- d) What is the advantage of J-K flip-flop over SR flip-flop.
- a) See Topic: NUMBER SYSTEM, Long Answer Type Question No. 3.
- b) & c) See Topic: COMBINATIONAL CIRCUIT, Long Answer Type Question No. 8.
- d) See Topic: FLIP-FLOP, Short Answer Type Question No. 4.
- 10. a) What is the difference between sequential and combinational circuit?
- b) Describe the propagation delay of a flip-flop.
- c) Express the Boolean function F = AB + A'C in a product of maxterm form.
- a) See Topic: COMBINATIONAL CIRCUIT, Short Answer Type Question No. 5.
- b) See Topic: FLIP-FLOP, Long Answer Type Question No. 12(a).
- c) See Topic: BOOLEAN ALGEBRA, Long Answer Type Question No. 8.
- 11. a) Draw a block diagram and write truth table of a D flip flop.
- b) Compare asynchronous and synchronous counter.
- c) Use 4 to 1 MUX and other necessary logic grate to design a full adder.
- a) See Topic: FLIP-FLOP, Short Answer Type Question No. 3.
- b) See Topic: RESISTER & COUNTER, Short Answer Type Question No. 1.
- c) See Topic: COMBINATIONAL CIRCUIT, Short Answer Type Question No. 6.
- 12. Write the short notes on any three of the following:
 - a) EPROM
 - b) D flip-flop
 - c) Ripple counter

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- d) Encoder
- e) 4-bit parallel adder.
- a) See Topic: MEMORY DEVICE, Long Answer Type Question No. 3(c).
- b) See Topic: FLIP-FLOP, Long Answer Type Question No. 14(b).
- c) See Topic: RESISTER & COUNTER, Long Answer Type Question No. 10(e).
- d) See Topic: COMBINATIONAL CIRCUIT, Long Answer Type Question No. 14(g).
- e) See Topic: ARITHMETIC CIRCUIT, Long Answer Type Question No. 5.