

# ICS past paper Answers

2017 2 ICS

June.

Q. b)

II

SOP

=

$$F(A, B, C, D) =$$

$$+ A' B' C' D'$$

$$+ A' B' C D'$$

$$+ A' B C' D'$$

$$+ A' B C D'$$

$$+ A B' C' D'$$

$$+ A B' C D'$$

$$+ A B C' D'$$

$$+ A B C D'$$

A	B	C	D	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	1
1	1	1	1	0

$$\bar{A} \bar{B} \bar{C} \bar{D}$$

$$\bar{A} \bar{B} C \bar{D}$$

$$\bar{A} B \bar{C} \bar{D}$$

$$\bar{A} B C \bar{D}$$

$$A \bar{B} \bar{C} \bar{D}$$

$$A \bar{B} C \bar{D}$$

$$A B \bar{C} \bar{D}$$

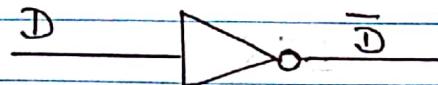
$$A B C \bar{D}$$

III

AB	$\bar{D}$			
	00	01	11	10
00	1			1
01	1			1
11	1			1
10	1			1

IV  $F(A, B, C, D) = \bar{D}$

V

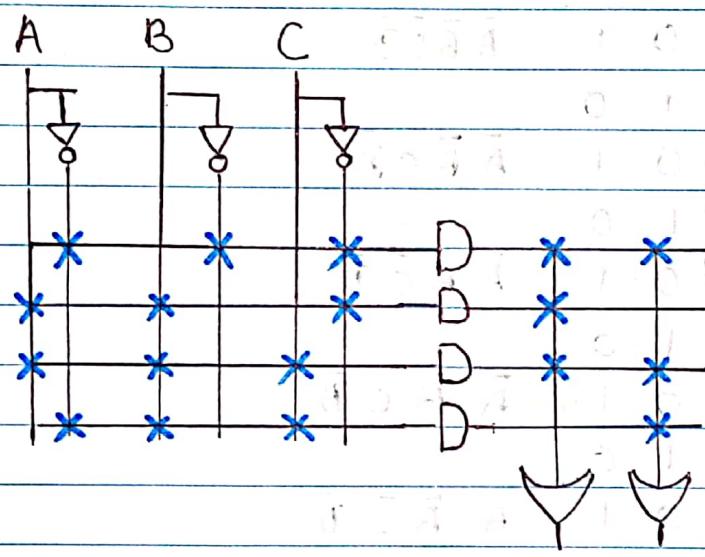


2. TIC

SOP

D, Q

$$c) F_1 = \bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + ABC \quad \& \quad F_2 = \bar{A}\bar{B}C + \bar{A}BC + ABC$$

 $F_1$  $F_2$

## Question

(4)

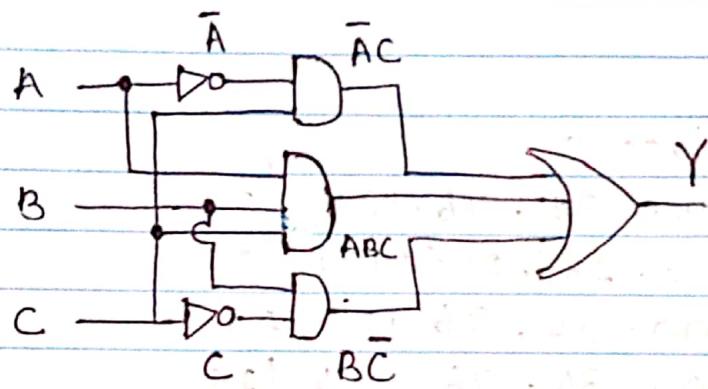
- d) a. Class D  
b. Class C  
c. Class A  
d. Class B
- e)
- a. Class C
  - b.  $200 \cdot 34 \cdot 76 \cdot 128 / 25$
  - c.  $255 \cdot 255 \cdot 255 \cdot 128 / 25$
  - d.  $200 \cdot 34 \cdot 76 \cdot 129 / 25$
  - e.  $200 \cdot 34 \cdot 76 \cdot 254 / 25$
  - f.  $200 \cdot 34 \cdot 76 \cdot 255 / 25$
  - g. Usable IP address =  $2^7 + 2 = 126$   
IP address = 128

Total host address = Max No of devices in network

Assumption : because the question is not clear.

2018 ICS - June

$$\text{II } Y = \bar{A}C + \bar{B}\bar{C} + ABC$$



$$\text{III Hint : } [x + \bar{x} = 1]$$

$$\begin{aligned} \bar{A}C \cdot 1 &= \bar{A}C \\ Y &= \bar{A}C \cdot (\bar{B} + B) + \bar{B}\bar{C} (A + \bar{A}) + ABC \\ &= \bar{A}BC + \bar{A}\bar{B}C + ABC\bar{C} + \bar{A}\bar{B}\bar{C} + ABC \end{aligned}$$

A	BC	$\bar{B}\bar{C}$	$\bar{B}C$	$B\bar{C}$
$\bar{A} \ 0$			1	1
A $1$			1	1

$\bar{A}C$

$$Y = \bar{A}C + B //$$

a)

A	B	C	D	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	1
1	1	1	1	1

$$\bar{A}\bar{B}\bar{C}\bar{D}$$

$$\bar{A}\bar{B}C\bar{D}$$

$$\bar{A}\bar{B}CD$$

$$AB\bar{C}\bar{D}$$

$$A\bar{B}\bar{C}\bar{D}$$

$$A\bar{B}\bar{C}\bar{D}$$

$$ABC\bar{D}$$

$$AB\bar{C}\bar{D}$$

$$AB\bar{C}\bar{D}$$

$$AB\bar{C}\bar{D}$$

$$AB\bar{C}\bar{D}$$

$$ABC\bar{D}$$

$$ABC\bar{D}$$

$$ABC\bar{D}$$

$$ABC\bar{D}$$

b)

$$SOP = \bar{A}\bar{B}\bar{C}\bar{D}$$

$$+ \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD$$

$$+ A\bar{B}\bar{C}\bar{D} + A\bar{B}C\bar{D}$$

$$+ ABC\bar{D} + ABC\bar{D}$$

$$+ ABCD$$

c)

AB

AB	00	01	11	10
00	1	X	1	1
01	X			
11	1		(1 1)	
10	1		(X 1)	

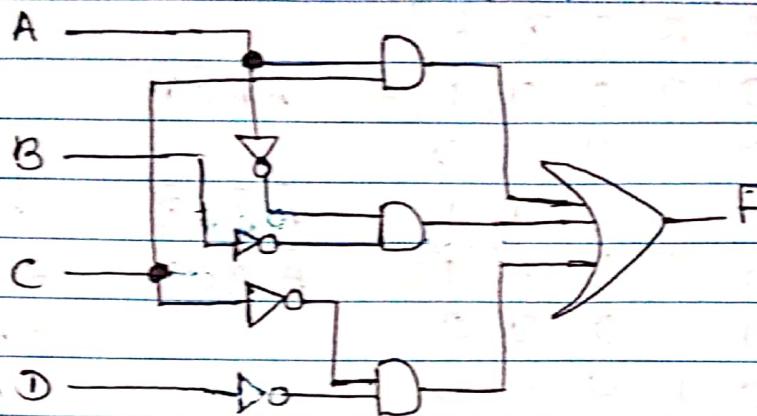
$$\bar{A}\bar{B}$$

$$AC$$

$$\bar{C}\bar{D}$$

$$F(A, B, C, D) = \bar{A}\bar{B} + AC + \bar{C}\bar{D}$$

d)



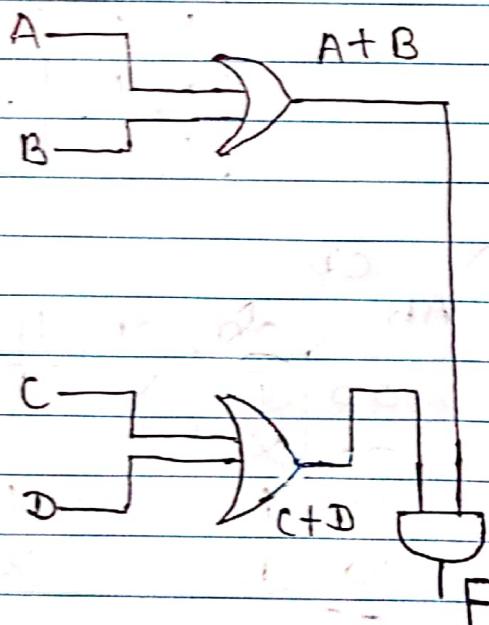
V

High - 1

Low - 0

$$(A+B) \cdot (C+D)$$

A	B	C	D	A+B	C+D	F
0	0	0	0	0	0	0
0	0	0	1	0	1	0
0	0	1	0	0	1	0
0	0	1	1	0	1	0
0	1	0	0	1	0	0
0	1	0	1	1	1	1
0	1	1	0	1	1	1
0	1	1	1	1	1	1
1	0	0	0	1	0	0
1	0	0	1	1	1	1
1	0	1	0	1	1	1
1	0	1	1	1	1	1
1	1	0	0	1	0	0
1	1	0	1	1	1	1
1	1	1	0	1	1	1
1	1	1	1	1	1	1



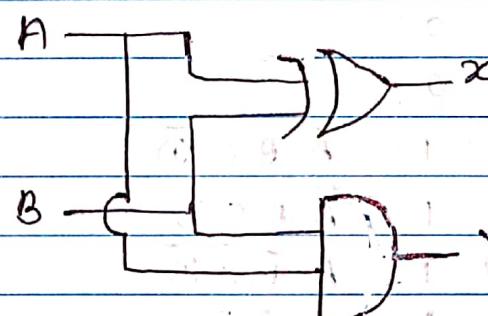
VI

a)

making 2bit adder

A	B	$\bar{A}$	$\bar{B}$	$A \cdot \bar{B}$	$\bar{A} \cdot B$	X	Y
0	0	1	1	0	0	0	0
0	1	1	0	0	1	1	0
1	0	0	1	1	0	1	0
1	1	0	0	0	0	1	0

b)



2017 ICS october

b) I

A	B	C	D	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

$\bar{A}\bar{B}\bar{C}\bar{D}$	$\bar{A}\bar{B}\bar{C}D$	$\bar{A}\bar{B}CD$	$\bar{A}\bar{B}C\bar{D}$	$\bar{A}BC\bar{D}$	$\bar{A}BCD$	$A\bar{B}\bar{C}\bar{D}$	$A\bar{B}\bar{C}D$	$A\bar{B}CD$	$AB\bar{C}\bar{D}$	$AB\bar{C}D$	$ABC\bar{D}$	$ABC\bar{D}$	$ABC\bar{D}$	$ABCD$
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
$+ A$	$+ B$	$+ C$	$+ D$	$+ A$	$+ B$	$+ C$	$+ D$	$+ A$	$+ B$	$+ C$	$+ D$	$+ A$	$+ B$	$+ C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$
$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$	$D$	$A$	$B$	$C$

III

$\bar{A}B$	$CD$	00	01	11	10
00		1	1		1
01				1	1
11					
10		1	1		

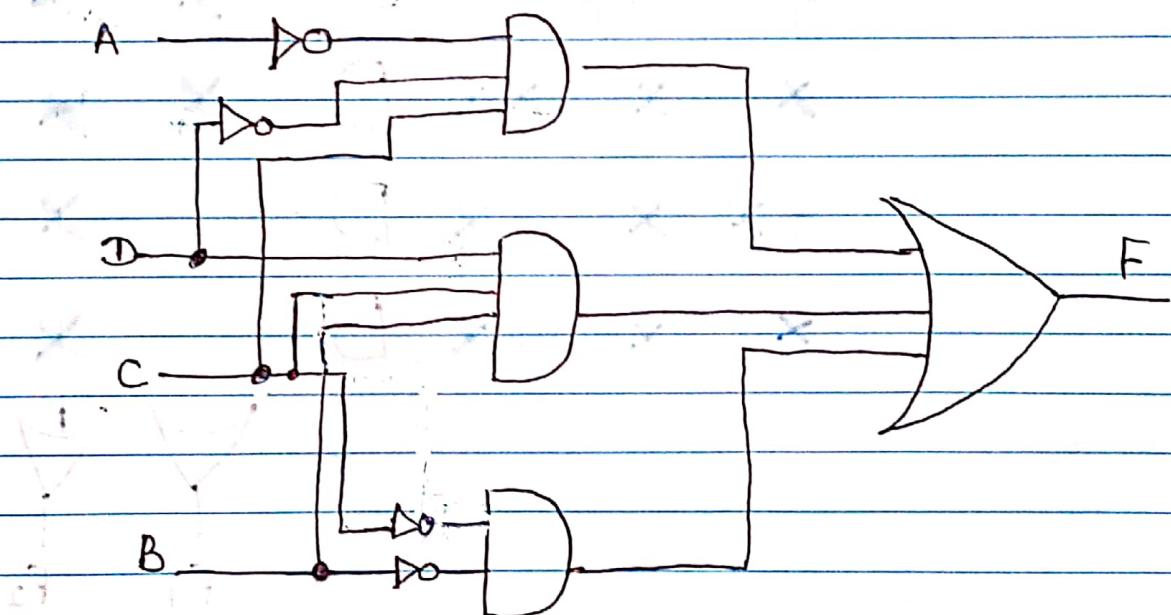
$\bar{B}\bar{C}$

$\bar{A}C\bar{D}$

$BC\bar{D}$

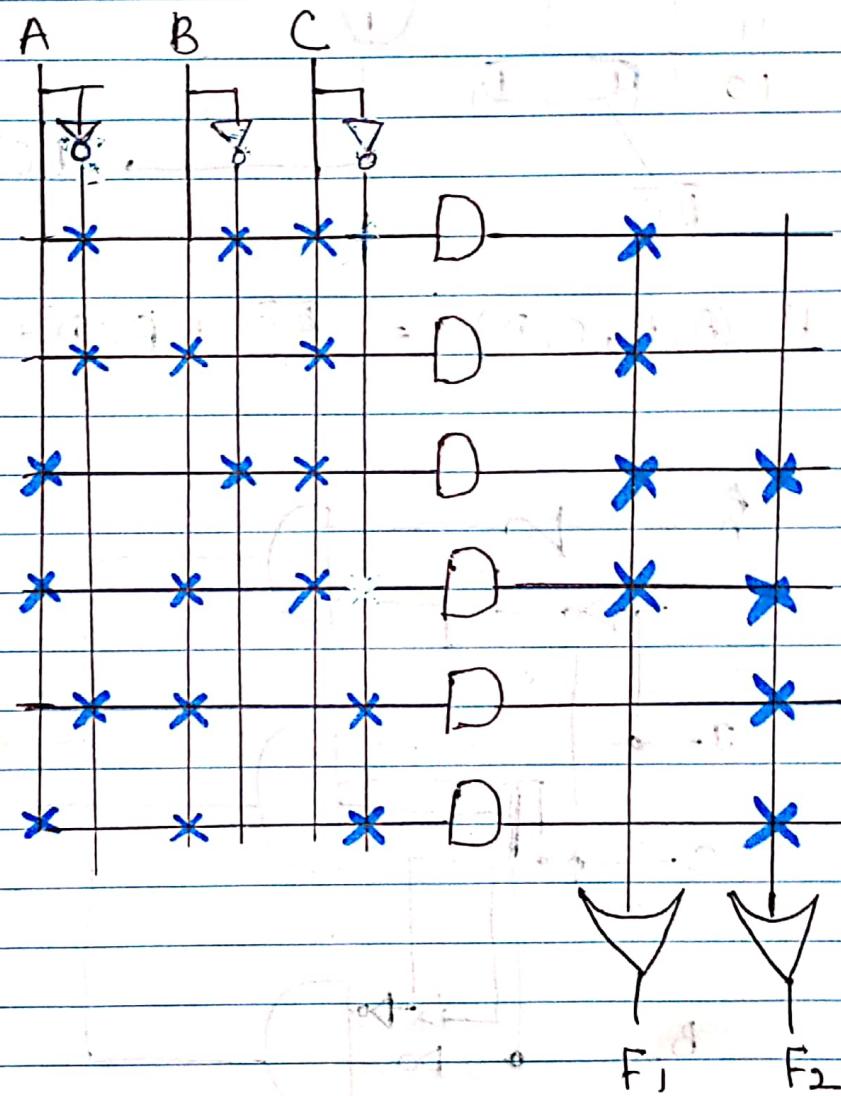
$$F(A, B, C, D) = \bar{B}\bar{C} + BC\bar{D} + \bar{A}C\bar{D}$$

IV



$$F_1 = \bar{A}\bar{B}C + \bar{A}BC + A\bar{B}C + ABC$$

$$F_2 = \bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + (\bar{A}B\bar{C}) + ABC$$



Q-4

ICS octuber 2018  
Networking

II.

- a. class B
- b. 16
- c. 255.255.0.0
- d. 172.18.0.0
- e. 172.18.255.255
- f. 172.18.1.0
- 172.18.2.0
- g. 172.18.255.253
- 122.18.255.254
- h.  $2^{16} - 2$   
= 65536 - 2  
= 65534



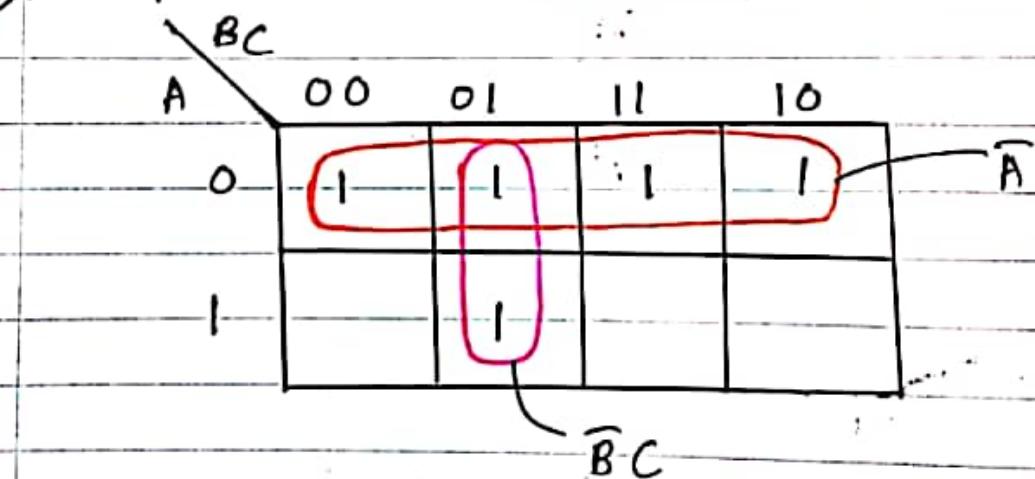
Date \_\_\_\_\_ ICS 2019 June

## Question 2

a)

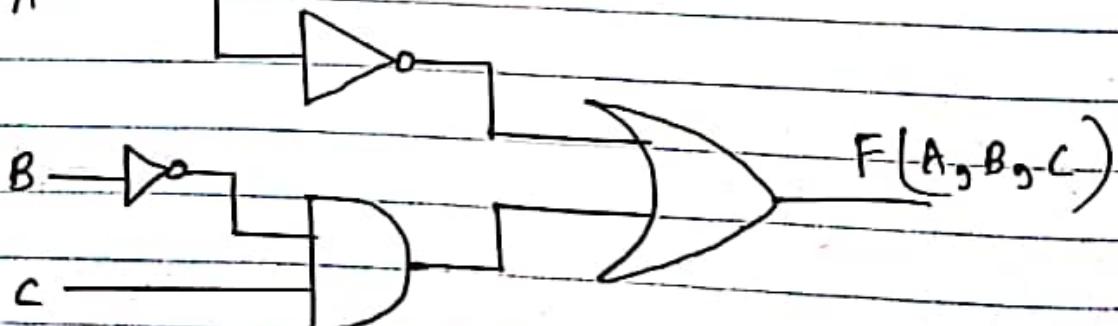
A	B	C	F	
0	0	0	1	$\bar{A}\bar{B}\bar{C}$
0	0	1	1	$\bar{A}\bar{B}C$
0	1	0	1	$\bar{A}B\bar{C}$
0	1	1	1	$\bar{A}BC$
1	0	0	0	
1	0	1	1	$A\bar{B}\bar{C}$
1	1	0	0	
1	1	1	0	

b). SOP =  $\bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + \bar{A}B\bar{C} + \bar{A}BC + A\bar{B}\bar{C}$

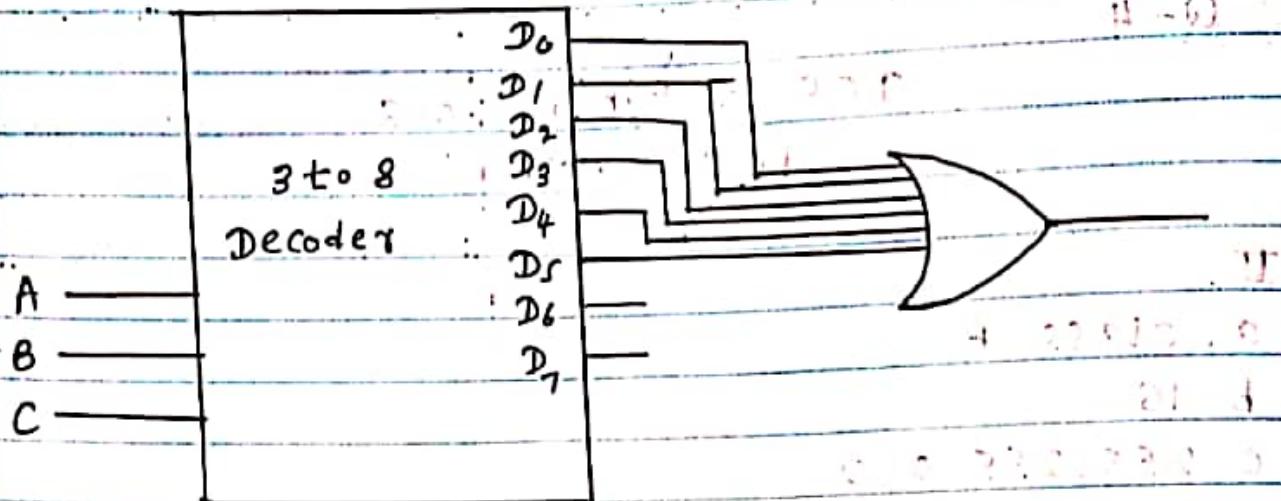


$$F(A, B, C) = \bar{A} + \bar{B}C$$

c)



(iv)



### Question 03

a)

i.  $11010010.1001000.1111011.0000111$   
= 210.152.251.15

b)

i. 10.16.1.10  
= 00001010.00010000.00000001.00001010

c)

- i. class C
- ii. 255.255.255.0
- iii. 201.70.64.0
- iv. I) 201.70.64.1  
II) 201.70.64.2
- v. 1) 201.70.64.253  
2) 201.70.64.254

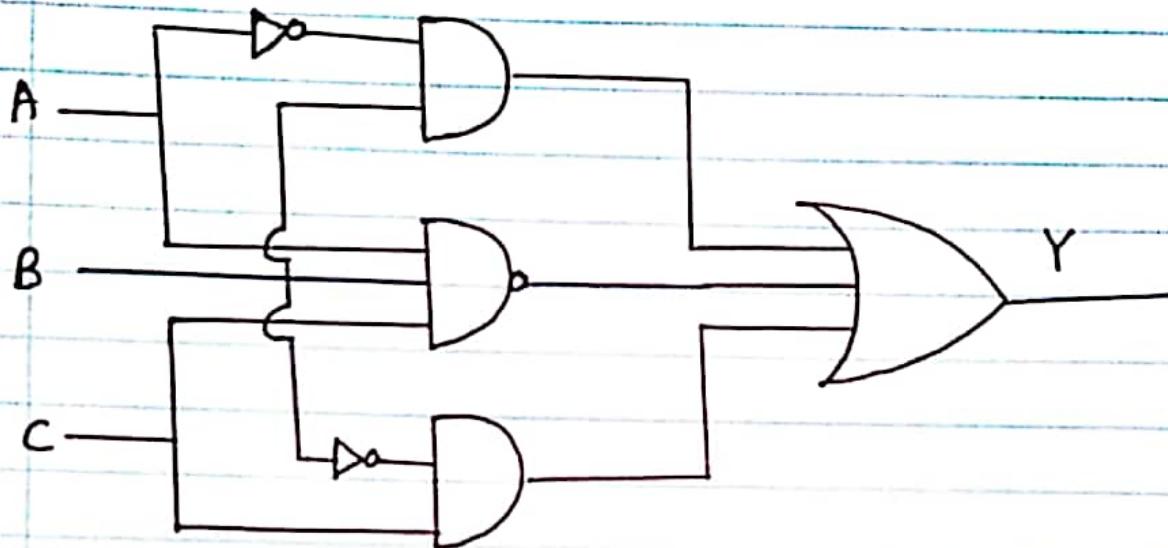
vi. No. of usable IP addresses =  $2^8 - 2$   
= 254

∴ Additional no. of computers added } = 254 - 25  
} = 229

2018 - ICS October

(II).

$$(i). Y = \overline{ABC} + \overline{B}C + \overline{A}B$$



(III).

$$\text{Hint } [x + \bar{x} = 1]$$

$$Y = \overline{ABC} + \overline{B}C(A + \bar{A}) + \overline{A}B(C + \bar{C})$$

$$Y = \overline{ABC} + A\overline{B}C + \overline{A}\overline{B}C + \overline{A}BC + \overline{AB}\overline{C}$$

		00	01	11	10	
		0	1	1	1	A
		1	1			
A	BC					
BC						

$$Y = A + \overline{B}C$$

v),

i)

A	B	C	D	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

(b).  $SOP = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{ABC}\bar{D} + \bar{ABC}D + A\bar{B}\bar{C}\bar{D} + A\bar{B}CD$

IV  
Slide 18

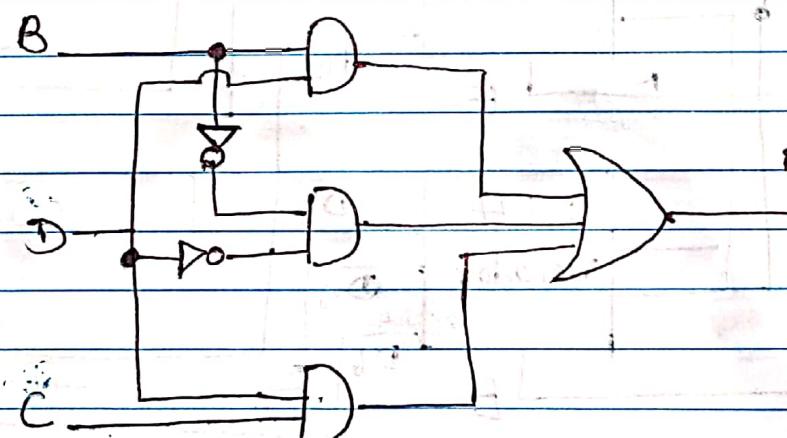
c)

AB	00	01	11	10
00	1			
01		1	1	
11		X	1	
10	1	X	X	1

CD

$$F(A, B, C, D) = \overline{B}\overline{D} + CD + BD$$

d)



$$F(A, B, C, D)$$

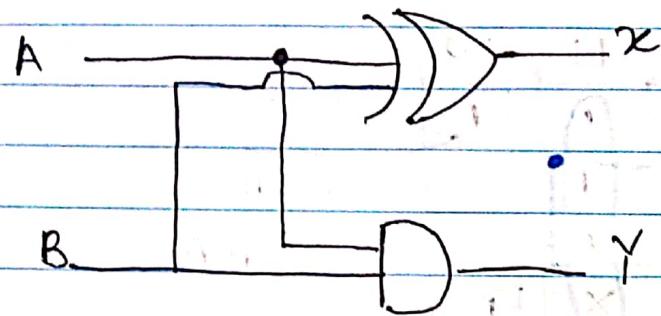
## V

A	B	A+B	A·B(Y)	A·B	$(A+B) \cdot (\overline{A} \cdot \overline{B})$ (Z)
0	0	0	0	1	0
0	1	1	0	1	1
1	0	1	0	1	1
1	1	0	1	0	0

## Slide 19

VI

a)



b)

