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Semester = 3rd

Program = BS (S.E)

Subject = DLD

Assignment = 3

\* Ans of Q1:

$$\begin{aligned} & A+B+C+D=0 \\ \text{When } & A=0, B=0, C=0, D=0 \end{aligned}$$

\* Ans of Q2:

$$\begin{aligned} & A+B+C+D=1 \\ \text{If either } & A=1 \text{ or } B=1 \text{ or } C=1 \text{ or } D=1 \end{aligned}$$

\* Ans of Q3:

$$\begin{aligned} & ABC=0 \\ \text{If either } & A=0 \text{ or } B=0 \text{ or } C=0 \end{aligned}$$

\* Ans of Q4:

\* (A)

$$0+0+0+1=1$$

\* (B)

$$1 \cdot 0 \cdot 1 \cdot 0 = 0$$

\* (C)

$$\begin{aligned} & 1 \cdot 0 + 1 \cdot 0 + 0 \cdot 1 + 0 \cdot 1 \\ & 0 + 0 + 0 + 0 = 0. \end{aligned}$$

\* Ans of Q5:

\* (A)  $\overline{A} \overline{B} C = 1$

$$\text{only if } A=0, B=0 \Rightarrow \overline{A}=1, \overline{B}=1, C=1$$

\* (B)

$$\overline{A} + \overline{B} + \overline{C} = 0$$

only if  $A=1, B=1 \Rightarrow \overline{A}=0, \overline{B}=0, \overline{C}=0$

\* Ans of Q 6:

\* (A)

$$\overline{\overline{(ABC)(EFG)}} + \overline{\overline{(HIJ)(KLM)}}$$

$$\overline{(ABC)(EFG)} \overline{(HIJ)(KLM)} \Rightarrow \overline{A+B} = \overline{A} \overline{B}$$

$$\overline{(ABC)(EFG)} \overline{(HIJ)(KLM)} \Rightarrow A=A$$

$$= (\overline{A+B+C})(\overline{E+F+G})(\overline{H+I+J})(\overline{K+L+M}) \Rightarrow \overline{ABC} = \overline{A+B+C}$$

\* (B)

$$\overline{\overline{(A+B)(C+D)(E+F)(G+H)}}$$

$$\overline{(A+B)(C+D)(E+F)(G+H)} \Rightarrow \overline{\overline{A}} = A$$

$$\overline{(\overline{A}\overline{B})(\overline{C}\overline{D})(\overline{E}\overline{F})(\overline{G}\overline{H})} \Rightarrow A+B = \overline{\overline{A}\overline{B}}$$

\* Ans of Q 7:

$$* A = (AB) + C$$

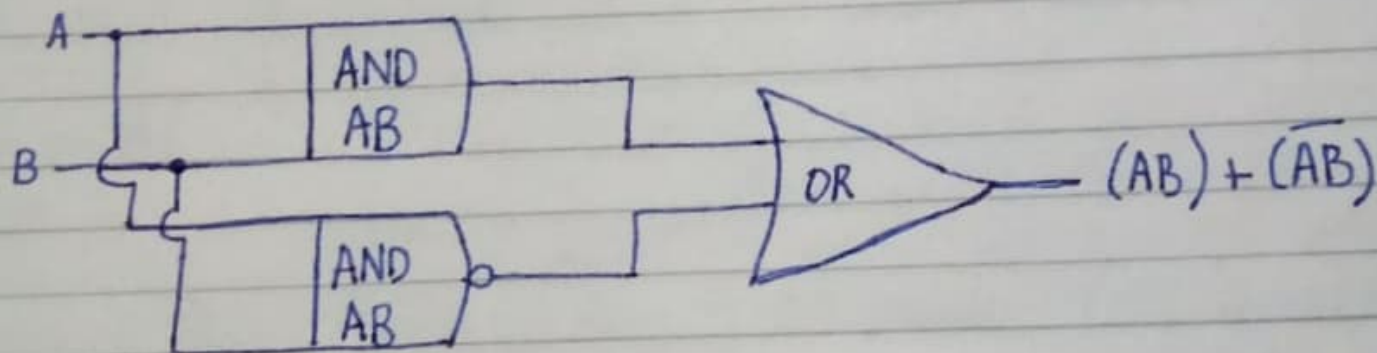
\* (B)  

$$= (\overline{A}B) \vee (A\overline{B})$$

\* (C)  

$$= (A+B)C$$

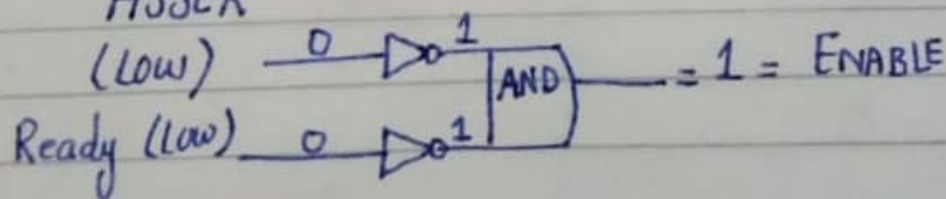
\* Ans of Question 8:



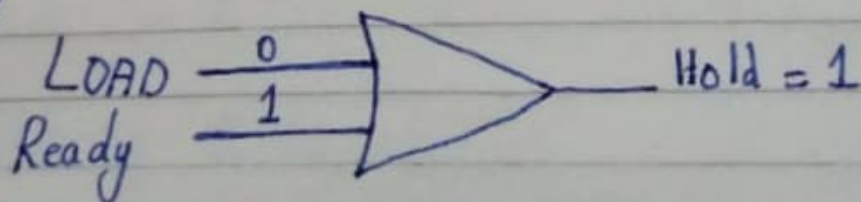
\* Ans of Question 9:

\* A:

ASSER



\* B:



\* Ans of Q 10:

\* A

$$Recoad = (Ver + CAM) RDY$$

VCR	CAMI	RDY	$VCR + CAMI$	$(VCR + CAMI) RDY$
0	0	0	0	0
0	0	1	0	0
0	1	0	1	0
0	1	1	1	1
1	0	0	1	0
1	0	1	1	1
1	1	0	1	0
1	1	1	1	1

\* (B)

$$\text{Send} = (RTS \cdot \text{ENABLE}) \text{ Busy}$$

RTS	ENABLE	Busy	$RTS \cdot \text{ENABLE}$	$(RTS \cdot \text{ENABLE}) \text{ Busy}$
0	0	0	0	0
0	0	1	0	0
0	1	0	0	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

\* Ans of Q 11:

\* A

A	B	C	(A+B)	(B+C)	(C+A)	(A+B)(B+C)(C+A)
0	0	0	0	0	0	0
0	0	1	0	1	1	0
0	1	0	1	1	0	0
0	1	1	1	1	1	1
1	0	0	1	0	1	0
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	1	1	1	1

\* B:

ABC	$\overline{A}$	$\overline{B}$	$\overline{C}$	$\overline{AB}$	$\overline{BC}$	$\overline{CA}$	$\overline{AB} + \overline{BC}$	$\overline{AB} + \overline{BC} + \overline{CA}$
0 0 0	1	1	1	0	0	0	0	0
0 0 1	1	1	0	0	1	0	1	1
0 1 0	1	0	1	1	0	0	1	1
0 1 1	1	0	0	1	0	0	1	1
1 0 0	0	1	1	0	0	1	0	1
1 0 1	0	1	0	0	1	1	1	1
1 1 0	0	0	1	0	0	0	0	0
1 1 1	0	0	0	0	0	0	0	0

\* Ans of Question 12:

\* (A)

$$A(A+B)$$

$$AA + AB \Rightarrow \text{Distributive law}$$

$$A + AB \Rightarrow AA = A \text{ Rule 7}$$

$$A \Rightarrow A + AB = A \text{ Rule 10}$$

\* (B)

$$A(A + \bar{A}B)$$

$$A(A+B) \Rightarrow A + \bar{A}B = A+B \text{ Rule 11}$$

$$AA + AB \Rightarrow \text{Distributive law}$$

$$A + AB \Rightarrow \text{Rule 7 } AA = A$$

$$A \Rightarrow \text{Rule 10 } A + AB = A$$

\* (C)

$$BC + \bar{B}C$$

$$CC \Rightarrow A + \bar{A} = 1 \text{ Rule 6}$$

$$C \Rightarrow AA = A \text{ Rule 7}$$

\* (D)

Same as b

$$BC + \bar{B}C$$

$$CC \Rightarrow A + \bar{A} = 1 \text{ Rule 6}$$

$$C \Rightarrow AA = A \text{ Rule 7}$$

\* (E)

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

$$A\bar{B}C + \bar{A}\bar{B}C + \bar{A}BC = \text{Rearranged}$$

$$(A + \bar{A})(\bar{B}C) + \bar{A}BC = \text{Refactor } \bar{B}C \text{ (distributive)}$$

$$1(\bar{B}C) + \bar{A}BC = A + \bar{A} = 1 \text{ Rule 6}$$

$$\bar{B}C + \bar{A}BC = A \cdot 1 = A \text{ Rule 4}$$

$$(\bar{A} + \bar{B})C = \text{Refactor } C \text{ (distributive)}$$

$$\bar{A}C + \bar{B}C = \text{Distributive law}$$

\* Ans of Q 13:

\* A:

$$= (C\bar{D}) + B)A + \bar{A}\bar{B}C = e\bar{D}A + BA + \bar{A}\bar{B}C$$

\* B:

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

\* C:

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

\* D:

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

b and c are equivalent.

\* Ans of Q 14:

\* A:

$$(C+D)(A+\bar{D})(A+\bar{D})(C+D)$$

$$= CA + C\bar{D} + DA + D\bar{D}$$

$$= C\bar{D} + CA + DA + 0 = D\bar{D} = 0 \text{ Rule 8}$$

$$= C\bar{D} + AD(1+C) \Rightarrow \text{factor AD}$$

$$e\bar{D} + AD(1) \Rightarrow 1+C=1 \text{ Rule 2.}$$

$$(e\bar{D}) + (AD)$$

\* B:

$$(A+C)(C\bar{D}+AC)$$

$$AC\bar{D} + AAC + CCD + ACE$$

$$AC\bar{D} + AC + eD + AC \Rightarrow AA = A \text{ Rule 7.}$$



$$ACD + AC + AC + eD$$

$$ACD + AC + CD \Rightarrow AE + AC = AC \quad ?$$

$$AC(1+D) + CD \Rightarrow \text{factor } AC$$

$$AC(C+D) + CD \Rightarrow \text{factor } AC$$

$$AC(1) + C(1) \Rightarrow 1+1 = 1 \text{ Rule 2}$$

$$(AC) + (eD).$$

\* C

$$B+C [BD + (C+\bar{D})E]$$

$$B+C [BD + (CE + \bar{D}E)] \text{ distributive law.}$$

$$B+C (BD + CE + \bar{D}E)$$

$$B+C (BE(CD + \bar{D}) + CE) \Rightarrow \text{factor } BE$$

$$B+C [BE(1) + CE] \Rightarrow A + \bar{A} = 1 \text{ Rule 6}$$

$$B+C (BE + CE)$$

$$B+C (CE(1+B)) = \text{factor } CE$$

$$B+C (CE(1+B)) \Rightarrow \text{factor } CE$$

$$B+C (CE)$$

$$B+CE \Rightarrow \text{distributive law.}$$

$$B+CE \Rightarrow ec = e \text{ Rule 7}$$

\* D:

$$A(A\bar{D} + C)$$

$$AA\bar{D} + AC \Rightarrow \text{distributive law}$$

$$A\bar{D} + AC \Rightarrow AA = A \text{ Rule 7}$$

\* F:

$$\begin{aligned} & BC + (\overline{B+C})D + BC \\ & BC + (\overline{B+C})D = BC + BC = BC \\ & BC + \overline{BD} + CD = \text{Distributive law} \\ & BC + \overline{CD} + \overline{BD} = \text{Rearranged} \\ & BC + \overline{BD} = (C+\overline{C}) = 1 \text{ Rule 10} \end{aligned}$$

\* G:

$$\begin{aligned} & BCD [BC + \overline{D}CD + BD] \\ & BCD [BC + CD\overline{D} + BD\overline{D}] = \text{distributive law} \\ & BCD [BC + C(0) + B(0)] \Rightarrow D\overline{D}, = 0 \text{ Rule 8} \\ & BCD (BC) \Rightarrow A(0) = 0 \text{ Rule 3} \\ & BCD BC \\ & BCD \Rightarrow (BC)(BC) = BC. \end{aligned}$$

\* H:

$$\begin{aligned} & A\overline{B} + A\overline{B}C + A\overline{B}CD + A\overline{B}CDE \\ & A\overline{B} (1+C) + A\overline{B}CD + A\overline{B}CDE \quad \overline{A}B \text{ common} \\ & A\overline{B} (1) + A\overline{B}CD + A\overline{B}CDE \quad 1+C=1 \text{ Rule 2} \\ & A\overline{B} (1+CD) + A\overline{B}CDE \quad \overline{A}B \text{ common} \\ & A\overline{B} (1) + A\overline{B}CDE \quad 1+CD=1 \text{ Rule 2} \\ & A\overline{B} (1+CDE) \quad \overline{A}B \text{ common} \\ & A\overline{B} (1) \quad 1+CDE=1 \text{ Rule 2} \\ & \overline{A}B \end{aligned}$$

Ans Q15:

(a)  $C\bar{D} + AD$

$C\bar{D}$  is missing A.

$$= C\bar{D} = C\bar{D}(A + \bar{A}) \Rightarrow C\bar{D}A + C\bar{D}\bar{A}$$

AD is missing C

$$= AD = AD(C + \bar{C}) \Rightarrow AD C + AD \bar{C}$$

$$C\bar{D}A + C\bar{D}\bar{A} + ADC + AD\bar{C} \quad \text{Ans}$$

(b)  $(AC) + (CD)$

AC is missing D

$$= AC = AC(D + \bar{D}) \Rightarrow ACD + AC\bar{D}$$

CD is missing A.

$$= CD = CD(A + \bar{A}) \Rightarrow CDA + CD\bar{A}$$

$$ACD + AC\bar{D} + CDA + CD\bar{A} \quad \text{Ans}$$

$$(c) B + CE$$

B is missing C and E

$$\Rightarrow B = B(C + \bar{C}) = BC + B\bar{C}$$

$$\Rightarrow BC = BC(E + \bar{E}) \Rightarrow BCE + BC\bar{E}$$

$$\Rightarrow B\bar{C} = B\bar{C}(E + \bar{E}) \Rightarrow B\bar{C}E + B\bar{C}\bar{E}$$

CE is missing B

$$\Rightarrow CE = CE(B + \bar{B}) \Rightarrow CEB + CE\bar{B}$$

$$BCE + BC\bar{E} + B\bar{C}E + B\bar{C}\bar{E} + CEB + CE\bar{B}$$

Ans

$$(d) A\bar{D} + AC$$

$A\bar{D}$  - is missing C

$$\Rightarrow A\bar{D} = A\bar{D}(C + \bar{C}) \Rightarrow A\bar{D}C + A\bar{D}\bar{C}$$

AC is missing D

$$\Rightarrow AC = AC(D + \bar{D}) \Rightarrow ACD + AC\bar{D}$$

$$A\bar{D}C + A\bar{D}\bar{C} + ACD + AC\bar{D}$$

Ans

$$1e) BC + DE$$

BC is missing E and D

$$\Rightarrow BC = BC(D + \bar{D}) = BCED + BC\bar{D}$$

$$\Rightarrow BCED = BCED(E + \bar{E}) = BCDE + BC\bar{E}D$$

$$\Rightarrow BC\bar{D} = BC\bar{D}(E + \bar{E}) = BC\bar{D}E + BC\bar{D}\bar{E}$$

DE is missing BC

$$\Rightarrow DE = DE(B + \bar{B}) = DEB + DE\bar{B}$$

$$\Rightarrow DEB = DEB(C + \bar{C}) = DEBC + DE\bar{B}C$$

$$\Rightarrow DE\bar{B} = DE\bar{B}(C + \bar{C}) = DE\bar{B}C + DE\bar{B}\bar{C}$$

$$BCDE + BC\bar{D}E + BC\bar{D}\bar{E} + DEBC + DE\bar{B}C + DE\bar{B}\bar{C}$$

Ans

$$(f) BCE$$

BCE is in standard SOP form.

Ans Q 16:

$$(a) e\bar{D}A + e\bar{D}\bar{A} + ADC + AD\bar{C}$$

sol

$$(C + \bar{D} + A)(e + \bar{D} + A)(A + D + C)(A + D + \bar{C})$$

Ans

$$(b) ACD + A\bar{C}\bar{D}eDA + eDA$$

$$sol (A + e + D)(A + e + \bar{D})(AC + D + A)(C + D + A)$$

Ans

$$(c) BE + B\bar{C}\bar{E} + B\bar{C}E + B\bar{C}\bar{E} + eEB + eE\bar{B}$$

sol

$$(B + e + E)(B + e + \bar{E})(B + \bar{C} + E)(B + \bar{C} + \bar{E})(e + E + B)(e + E + \bar{B})$$

Ans

$$(d) A\bar{D}C + A\bar{D}\bar{C} + A\bar{C}D + A\bar{C}\bar{D}$$

$$(A + \bar{D} + C)(A + \bar{D} + \bar{C})(A + e + D)(A + e + \bar{D})$$

Ans

$$(e) BEDE + BEDE + BE\bar{D}E + BE\bar{D}\bar{E} + DEBC + DEB\bar{C} + DE\bar{D}C + DE\bar{D}\bar{C}$$

$$sol (B + e + D + E)(B + e + D + \bar{E})(B + e + \bar{D} + \bar{E})(B + e + \bar{D} + E)$$

$$(D + E + B + C)(D + E + B + \bar{C})(D + E + \bar{B} + C)(D + E + \bar{B} + \bar{C})$$

Ans

Ans Q 17:

(a)

	A	C	D	X	
	0	0	0	0	
	0	0	1	0	
	0	1	0	1	$\overline{A}\overline{C}\overline{D}$
	0	1	1	0	
	1	0	0	0	
	1	0	1	1	$\overline{A}\overline{C}\overline{D}$
	1	1	0	1	$\overline{A}\overline{C}\overline{D}$
	1	1	1	1	$\overline{A}\overline{C}\overline{D}$

(b)

	A	C	D	X	
	0	0	0	0	
	0	0	1	0	
	0	1	0	0	
	0	1	1	1	$\overline{A}\overline{C}\overline{D}$
	1	0	0	0	
	1	0	1	0	<del><math>\overline{A}\overline{C}\overline{D}</math></del>
	1	1	0	1	$\overline{A}\overline{C}\overline{D}$
	1	1	1	1	$\overline{A}\overline{C}\overline{D}$

(c)

	B	C	E	X	
	0	0	0	0	
	0	0	1	0	
	0	1	0	0	
	0	1	1	1	$\overline{B}\overline{C}\overline{E}$
	1	0	0	1	$\overline{B}\overline{C}\overline{E}$
	1	0	1	1	$\overline{B}\overline{C}\overline{E}$
	1	1	0	1	$\overline{B}\overline{C}\overline{E}$
	1	1	1	1	$\overline{B}\overline{C}\overline{E}$

(d)

	A	C	D	X	
	0	0	0	0	
	0	0	1	0	
	0	1	0	0	
	0	1	1	0	
	1	0	0	1	$\overline{A}\overline{C}\overline{D}$
	1	0	1	0	<del><math>\overline{A}\overline{C}\overline{D}</math></del>
	1	1	0	1	$\overline{A}\overline{C}\overline{D}$
	1	1	1	1	$\overline{A}\overline{C}\overline{D}$

(c)

B	C	D	E	X	
0	0	0	0	0	
0	0	0	1	0	
0	0	1	0	0	
0	0	1	1	1	$\overline{B}CDE$
0	1	0	0	0	
0	1	0	1	0	
0	1	1	0	0	-
0	1	1	1	1	$B\overline{C}DE$
1	0	0	0	0	
1	0	0	1	0	
1	0	1	0	0	
1	0	1	1	1	$B\overline{C}DE$
1	1	0	0	1	$BC\overline{D}E$
1	1	0	1	1	$BCDE$
1	1	1	0	1	$B\overline{C}DE$
1	1	1	1	1	$BCDE$

(d)

B	C	E	X	
0	0	0	0	
0	0	1	0	
0	1	0	0	
0	1	1	0	
1	0	0	0	
1	0	1	0	
1	1	0	0	
1	1	1	1	$BCE$

Ans Q18:

(a)

A	C	D	X	X	
0	0	0	0	0	$(A \neq C + D)$
0	0	1	0	0	$(A + C + \overline{D})$
0	1	0	1	0	$(\overline{A} + C + \overline{D})$
0	1	1	0	0	01
1	0	0	0	0	01
1	0	1	1	0	$(A + \overline{C} + D)$
1	1	0	1	0	01
1	1	1	1	0	01

(b)

A	C	D	X	
0	0	0	0	$(A + C + D)$
0	0	1	0	$(A + C + \overline{D})$
0	1	0	0	01
0	1	1	0	01
1	0	0	0	$(\overline{A} + C + D)$
1	0	1	0	01
1	1	0	0	01
1	1	1	0	01



(c)

B	c	E	X	
0	0	0	0	$(B+c+E)$
0	0	1	0	$(B+c+\bar{E})$
0	1	0	0	$(B+\bar{c}+E)$
0	1	1	0	$(B+\bar{c}+\bar{E})$
1	0	0	0	$(\bar{B}+c+E)$
1	0	1	0	
1	1	0	0	
1	1	1	0	

(d)

A	c	D	X	
0	0	0	0	$(A+c+D)$
0	0	1	0	$(A+c+\bar{D})$
0	1	0	0	
0	1	1	0	$(A+\bar{c}+\bar{D})$
1	0	0	0	
1	0	1	0	
1	1	0	0	<del><math>(A+c+D)</math></del>
1	1	1	0	

(e)

B	c	E	X	
0	0	0	0	$(B+c+E)$
0	0	1	0	
0	1	0	0	
0	1	1	0	
1	0	0	0	
1	1	0	0	
1	1	1	0	

(e)

B	c	D	E	X	
0	0	0	0	0	$(B+c+D+E)$
0	0	0	1	0	$(B+c+D+\bar{E})$
0	0	1	0	0	$(B+c+\bar{D}+E)$
0	0	1	1	0	$(B+c+\bar{D}+\bar{E})$
0	1	0	0	0	$(B+\bar{c}+D+E)$
0	1	0	1	0	
0	1	1	0	0	
0	1	1	1	0	
1	0	0	0	0	$(\bar{B}+c+D+E)$
1	0	0	1	0	
1	0	1	0	0	
1	0	1	1	0	
1	1	0	0	0	$(\bar{B}+\bar{c}+D+E)$
1	1	0	1	0	
1	1	1	0	0	
1	1	1	1	0	

Ans Q 19:

A	B	C	D	X	
0	0	0	0	1	$(\overline{A}\overline{B}\overline{C}\overline{D})$
0	0	0	1	1	$(\overline{A}\overline{B}\overline{C}D)$
0	0	1	0	0	$(\overline{A}\overline{B}C\overline{D})$
0	0	1	1	1	$(\overline{A}\overline{B}CD)$
0	1	0	0	0	$(\overline{A}B\overline{C}\overline{D})$
0	1	0	1	1	$(\overline{A}B\overline{C}D)$
0	1	1	0	1	$(\overline{A}BC\overline{D})$
0	1	1	1	0	$(\overline{A}BCD)$
1	0	0	0	0	$(A\overline{B}\overline{C}\overline{D})$
1	0	0	1	1	$(A\overline{B}\overline{C}D)$
1	0	1	0	0	$(A\overline{B}C\overline{D})$
1	0	1	1	0	$(A\overline{B}CD)$
1	1	0	0	1	$(ABC\overline{D})$
1	1	0	1	0	$(ABC\overline{D})$
1	1	1	0	0	$(ABCD)$
1	1	1	1	0	$(\overline{A}+\overline{B}+\overline{C}+\overline{D})$

Ans Q 20:

(a)  $\overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C} + A\overline{B}C$   
 $000 \quad 001 \quad 101$

$(\overline{A}\overline{B}) + (\overline{A}\overline{B}) + (A\overline{B}C)$

	C	
AB	0	1
00	1	1
01		
11		
10		1

$$b) AC(\bar{B} + C) = AC\bar{B} + AC$$

AC is missing B.

$$\Rightarrow AC = AC(B + \bar{B}) \Rightarrow ACB + AC\bar{B}$$

$$= AC\bar{B} + ACB + AC\bar{B} \Rightarrow AC\bar{B} + ACB = ACB$$

$$= AC\bar{B} + ACB$$

$$110 \quad 111$$

	B	
A \ C	0	1
00		
01		
11	0	1
10		

$$\Rightarrow (AC)$$

Ans

$$c) \bar{A}(B\bar{C} + B\bar{C}) + A(BC + B\bar{C})$$

$$\bar{A}B\bar{C} + \bar{A}B\bar{C} + ABC + AB\bar{C}$$

$$011 \quad 010 \quad 111 \quad 110$$

	C	
A \ B	0	1
00		
01	1	1
11	1	1
10		

$$= \bar{A}B + AB = B$$

Ans

$$(g) \overline{A}B + A\overline{B} + \overline{C}D + C\overline{D}$$

$\overline{A}B$  is missing  $CD$ .

$$\overline{A}B = \overline{A}B(C + \overline{C}) = \overline{A}BC + \overline{A}B\overline{C}$$

$$\overline{A}BC = \overline{A}BC(D + \overline{D}) = \overline{A}BCD + \overline{A}BC\overline{D} \quad \text{①}$$

$$\overline{A}B\overline{C} = \overline{A}B\overline{C}(D + \overline{D}) = \overline{A}B\overline{C}D + \overline{A}B\overline{C}\overline{D} \quad \text{②}$$

$A\overline{B}$  is missing  $CD$ .

$$\Rightarrow A\overline{B} = A\overline{B}CD + A\overline{B}C\overline{D} + A\overline{B}\overline{C}D + A\overline{B}\overline{C}\overline{D}$$

$\overline{C}D$  is missing  $AB$ .

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

$C\overline{D}$  is missing  $AB$ .

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

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

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

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

$$= AB$$

	00	01	11	10
00	0	1	1	1
01		1		1
11	1			1
10	1	1	1	1

$$= (\overline{A}B) + (A\overline{B}) + (AB) + (A\overline{B})$$



Ans @ 26:

$$(a) (A + \bar{B})(A + \bar{C})(\bar{A} + \bar{B} + C)$$

$A + \bar{B}$  is missing  $C$ .

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

$A + \bar{C}$  is missing  $B$ .

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

$$(A + \bar{B} + C)(A + \bar{B} + \bar{C})(A + B + \bar{C})(A + \bar{B} + \bar{C})(\bar{A} + \bar{B} + C)$$

$$0 \ 1 \ 0 \ 0 \ 1 \ 1 \ 0 \ 0 \ 1 \ 0 \ 1 \ 1 \ 1 \ 1 \ 0$$

AB	C	
	0	1
00	0	0
01	0	0
11	0	0
10	1	1

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

Ans