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LÓGICA COMPUTACIONAL

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SIST. DE INFORMAÇÃO 2021.2

1.

(i) $p \wedge q \rightarrow r \vee s$

$\neg(p \wedge q) \vee (r \vee s)$

$(\neg p \vee \neg q) \vee (r \vee s)$

$\neg p \vee \neg q \vee r \vee s$

$\{\bar{p}\ \bar{q}\ r\ s\}$

(ii) $p \vee q \rightarrow r \vee s$

$\neg(p \vee q) \vee (r \vee s)$

$(\neg p \wedge \neg q) \vee (r \vee s)$

$(\neg p \vee r \vee s) \wedge (\neg q \vee r \vee s)$

$\{\bar{p}\ r\ s,\ \bar{q}\ r\ s\}$

(iii) $\neg(p \vee q \vee r)$

$(\neg p \vee \neg q \vee \neg r)$

$\{\bar{p}\ \bar{q}\ \bar{r}\}$

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(iv) $\neg(p \wedge q \wedge r)$

$(\neg p \vee \neg q \vee \neg r)$

$\{\bar{p}\ \bar{q}\ \bar{r}\}$

(v) $p \wedge q \leftrightarrow r$

$(p \wedge q) \rightarrow r \wedge (r \rightarrow p \wedge q)$

$(\neg(p \wedge q) \vee r) \wedge (r \vee (\neg(p \wedge q)))$

$((\neg p \vee \neg q) \vee r) \wedge (r \vee (\neg p \vee \neg q))$

$(\neg p \vee r) \wedge (\neg q \vee r) \wedge (\neg r \vee p) \wedge (\neg r \vee q)$

$\{\bar{p}\ \bar{q}\ r, \bar{r} p, \bar{r} q\}$

2-

(i) $\{p, q, \neg r\} \wedge \{r, s\}$

$\{p q \bar{r}, r s\}$

$p q s$

(ii) $\{p, q, r\} \wedge \{r, \neg s, \neg t\}$

$\{p\ q\ r, r \bar{s} \bar{t}\}$

$\{p q r \bar{s} \bar{t}\}$

(iii) $\{q, \neg q\} \wedge \{q, \neg q\}$

$\{q\bar{q}, q\bar{q}\}$

□ Vuoto insoddisfattibile

(iv) $\{\neg p, q, r\} \wedge \{p, \neg q, \neg r\}$

$\{\bar{p}qr, p\bar{q}\bar{r}\}$

qr

r □ vuoto

3- $\{p, q\}, \{\neg p, r\}, \{\neg p, \neg r\}, \{p, \neg q\}$

$\{pq, \bar{p}r, \bar{p}\bar{r}, p\bar{q}\}$

qr

q

□ vuoto

4-

(i) $\{p\bar{q}, q\bar{r}, rs, p\bar{r}\}$

$p\bar{r}$

ps

psr $S' = \{\bar{q}, q\bar{r}, rs\}$

data
fecha

(ii) $\{pqr, \bar{q}, p\bar{r}s, qs, p\bar{s}\}$

pr

ps

pqs

pq $\quad S' = \{qr, \bar{q}, qs\}$

(iii) $\{pqrs, q\bar{r}s, p\bar{r}s, qs, p\bar{s}\}$

pqs

$pq\bar{r}s$

$pq\bar{r}s$

$pq\bar{r}$ $\quad S'' = \{prs, p\bar{r}s, p\bar{s}\}$

(iv) $\{\bar{p}q, qrs, \bar{p}q\bar{r}s, \bar{r}, q\}$

$\bar{p}qrs$

$\bar{p}rs$

$\bar{p}s$

psq $\quad S' = \{q, qrs, \bar{r}, q\}$

fecha

5-

(i) $\{p\bar{q}, q\bar{r}, rs, p\bar{r}\}$ $4-3=1$

$(p\bar{q} \vee q\bar{r} \vee x1) \wedge (\neg x1 \vee rs \vee p\bar{r})$

(ii) $\{pqr, \bar{q}, pr\bar{s}, qs, p\bar{s}\}$ $5-3=2$

$(pqr \vee \bar{q} \vee x1) \wedge (\neg x1 \vee pr\bar{s} \vee x2) \wedge (\neg x2 \vee qs \vee p\bar{s})$

(iii) $\{pqrs, q\bar{r}s, p\bar{r}s, qs, p\bar{s}\}$

$(\bar{p}q \vee qrs \vee x1) \wedge (\neg x1 \vee \bar{p}\bar{q}rs \vee x2) \wedge (\neg x2 \vee \bar{r} \vee q)$

data
fecha

6-

$\{p, p \to ((q \vee r) \wedge \neg(q \wedge r)), p \to ((s \vee t) \wedge \neg(s \wedge t)), s \to q,$
$\neg r \to t, t \to s\}$

1º p

2º $p \to ((q \vee r) \wedge \neg(q \wedge r))$
$\neg p \vee ((q \vee r) \wedge (\neg q \wedge \neg r))$
$\neg p \vee q \vee r, \neg q \wedge r$
$\bar{p} q r, q r$

3º $p \to ((s \vee t) \wedge \neg(s \wedge t))$
$\neg p \vee ((s \vee t) \wedge (\neg s \vee \neg t))$
$\neg p \vee s \vee t \wedge \neg s \vee \neg t$
$\bar{p} s t, \bar{s} \bar{t}$

4º $s \to q$
$\neg s \vee q$
$\bar{s} q$

5º $\neg r \to t$
$\neg \neg r \vee t$
$r t$

6º $t \to s$
$\neg t \vee s$
$\bar{t} s$

$\{p, \bar{p} q r, \bar{q} r, \bar{p} s t, \bar{s} \bar{t}, \bar{s} q, r t, \bar{t} s\}$

data
fecha

7-

11	12	13	14
21	22	23	24
31	32	33	34
41	42	43	44

p1 ∨ p2 ∨ p3 = V

(F F V)
(V F F)
(F V V)
(V V F)

p1 ∨ p2 ∨ p3 = F

(F F F)

$(\overline{p1} \vee \overline{p2}) \wedge (\overline{p1} \vee \overline{p3}) \wedge (\overline{p2} \vee \overline{p3})$

V V V F V F = V
F V F F V F = F
V V V V V V = V

LINHA

$\overline{11} \vee 12, \overline{11} \vee \overline{13}, \overline{11} \vee 14, 12 \vee \overline{13}, 12 \vee 14, \overline{13} \vee 14$
$\overline{21} \vee \overline{22}, \overline{21} \vee \overline{23}, \overline{21} \vee \overline{24}, \overline{22} \vee \overline{23}, \overline{22} \vee \overline{24}, \overline{23} \vee \overline{24}$
$\overline{31} \vee \overline{32}, \overline{31} \vee \overline{33}, \overline{31} \vee \overline{34}, \overline{32} \vee \overline{33}, \overline{32} \vee \overline{34}, \overline{33} \vee \overline{34}$
$\overline{41} \vee \overline{42}, \overline{41} \vee \overline{43}, \overline{41} \vee \overline{44}, \overline{42} \vee \overline{43}, \overline{42} \vee \overline{44}, \overline{43} \vee \overline{44}$

COLUNA

$\overline{11} \vee \overline{21}, \overline{11} \vee \overline{31}, \overline{11} \vee \overline{41}, \overline{21} \vee \overline{31}, \overline{21} \vee \overline{41}, \overline{31} \vee \overline{41}$
$\overline{12} \vee \overline{22}, \overline{12} \vee \overline{32}, \overline{12} \vee \overline{42}, \overline{22} \vee \overline{32}, \overline{22} \vee \overline{42}, \overline{32} \vee \overline{42}$
$\overline{13} \vee \overline{23}, \overline{13} \vee \overline{33}, \overline{13} \vee \overline{43}, \overline{23} \vee \overline{33}, \overline{23} \vee \overline{43}, \overline{33} \vee \overline{43}$
$\overline{14} \vee \overline{24}, \overline{14} \vee \overline{34}, \overline{14} \vee \overline{44}, \overline{24} \vee \overline{34}, \overline{24} \vee \overline{44}, \overline{34} \vee \overline{44}$

data
fecha

DIAGONAL

$\overline{11} \vee \overline{22}$, $\overline{11} \vee \overline{33}$, $\overline{11} \vee \overline{44}$
$\overline{13} \vee \overline{22}$, $\overline{13} \vee \overline{31}$, $\overline{13} \vee \overline{24}$
$\overline{21} \vee \overline{32}$, $\overline{21} \vee \overline{43}$
$\overline{23} \vee \overline{32}$, $\overline{23} \vee \overline{41}$, $\overline{23} \vee \overline{34}$
$\overline{31} \vee \overline{42}$
$\overline{33} \vee \overline{43}$, $\overline{33} \vee \overline{44}$

$\overline{12} \vee \overline{22}$, $\overline{12} \vee \overline{23}$, $\overline{12} \vee \overline{34}$
$\overline{14} \vee \overline{23}$, $\overline{14} \vee \overline{32}$, $\overline{14} \vee \overline{41}$
$\overline{22} \vee \overline{31}$, $\overline{22} \vee \overline{33}$, $\overline{22} \vee \overline{44}$
$\overline{24} \vee \overline{33}$, $\overline{24} \vee \overline{42}$
$\overline{32} \vee \overline{41}$, $\overline{32} \vee \overline{43}$
$\overline{34} \vee \overline{43}$

11	(12)	13	14
21	22	23	(24)
(31)	32	33	34
41	42	(43)	44