Підготовчі завдання

Зад 1.

$C = \{P, T, I, O\}$ $P = (p_1, \dots, p_6)$ $T = (t_1, t_3)$

$I(t_1) = (p_1, p_2)$

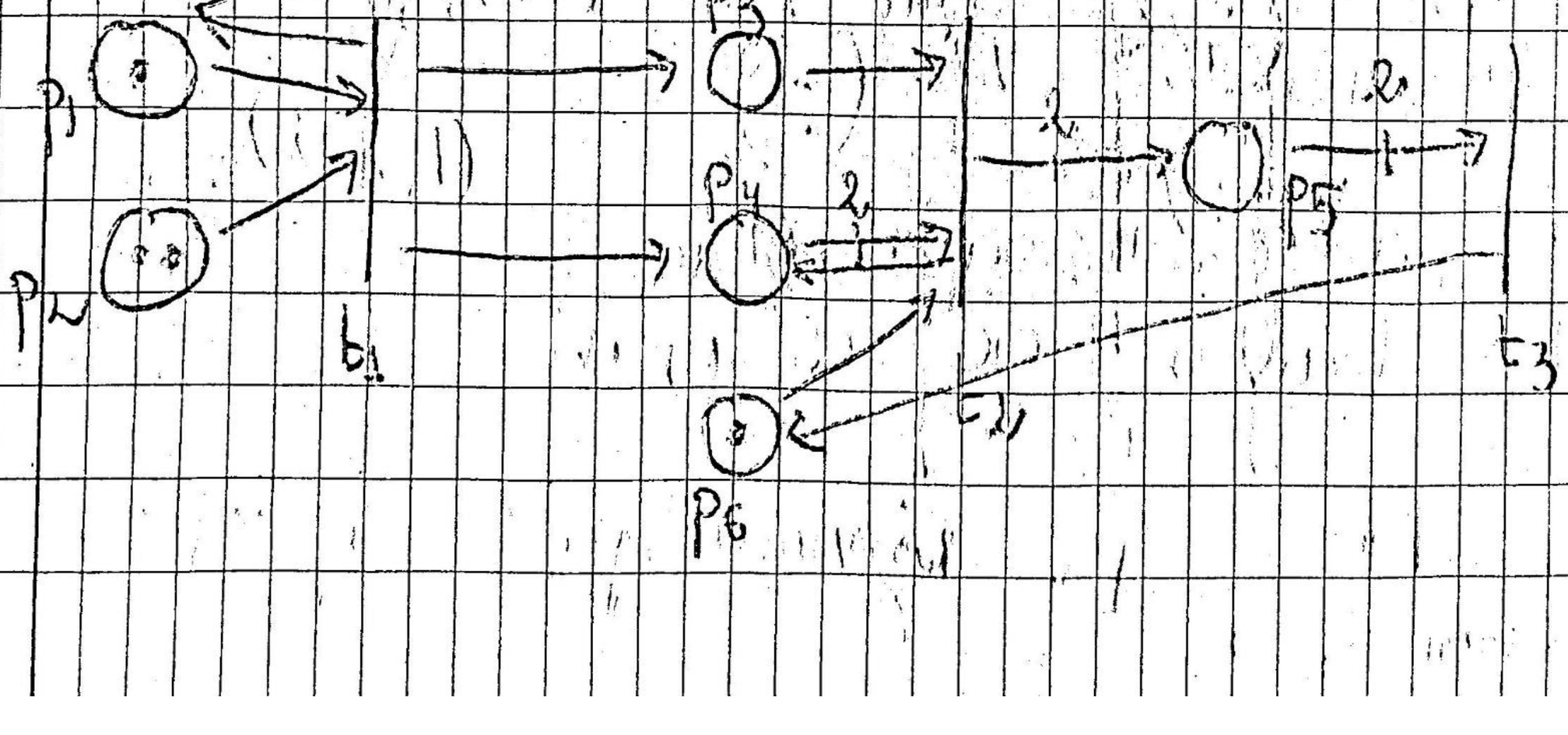
$I(t_2) = (p_3, p_4, p_4, p_6)$

$I(t_3) = (p_5, p_5)$

$O(t_1) = (p_1, p_3, p_4)$

$O(t_2) = (p_4, p_5, p_5)$

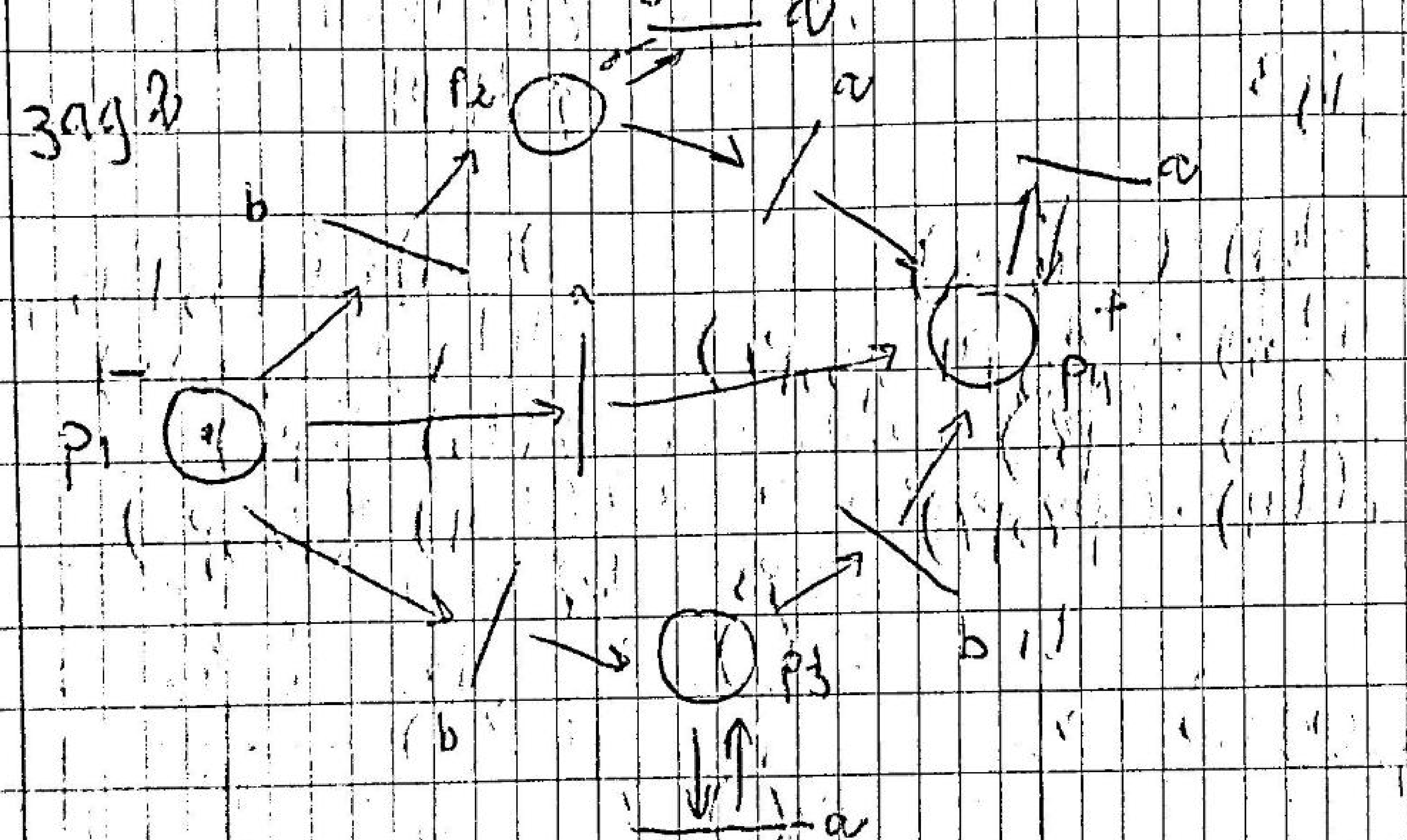
$O(t_3) = (p_6)$



	p1	p2	p3	p4	p5	p6
M_0	1	2	0	0	0	1
t_1	1	1	1	1	0	1
t_1	1	0	2	2	0	1
t_2	1	0	1	1	2	0
t_3	1	0	1	1	0	1

Блокада

Зад 2



в) 5 други: ba, baa, aa, bb, bab, baab, baabaa

a) $L = aa^* + ba^*aa^* + ba^*ba^*$ регуларна

$L = \underbrace{(a + ba^*a + ba^*b)}_{F} a^*$

б) $L = Fa^*$

$n = 0$ $L = F$ $p_1: S \to F$

$n = 1$ $L = Fa$ $p_2: S \to Fa$

$p_3: F \to a$

$F = a + ba^*a + ba^*b$ $p_4: F \to Ba$

$F = a$ $F = ba^*a$ $F = ba^*b$ $p_5: B \to b$

$p_6: B \to Ba$

$p_7: F \to Cb$

$p_8: C \to b$

$p_9: C \to Ca.$

$F = \underbrace{ba^*}_{B} a$

$F = Ba$

$B = ba^*$

$n = 0$ $\quad$ $B = b$

$n = 1$ $\quad$ $B = ba = Ba$

$n = 2$ $\quad$ $C = ba = Ca$

$F = \underbrace{ba^*}_{C} b$

$F = Cb$ $\quad$ | $F = Bb$

$C = ba^*$

$n = 0$ $\quad$ $C = b$

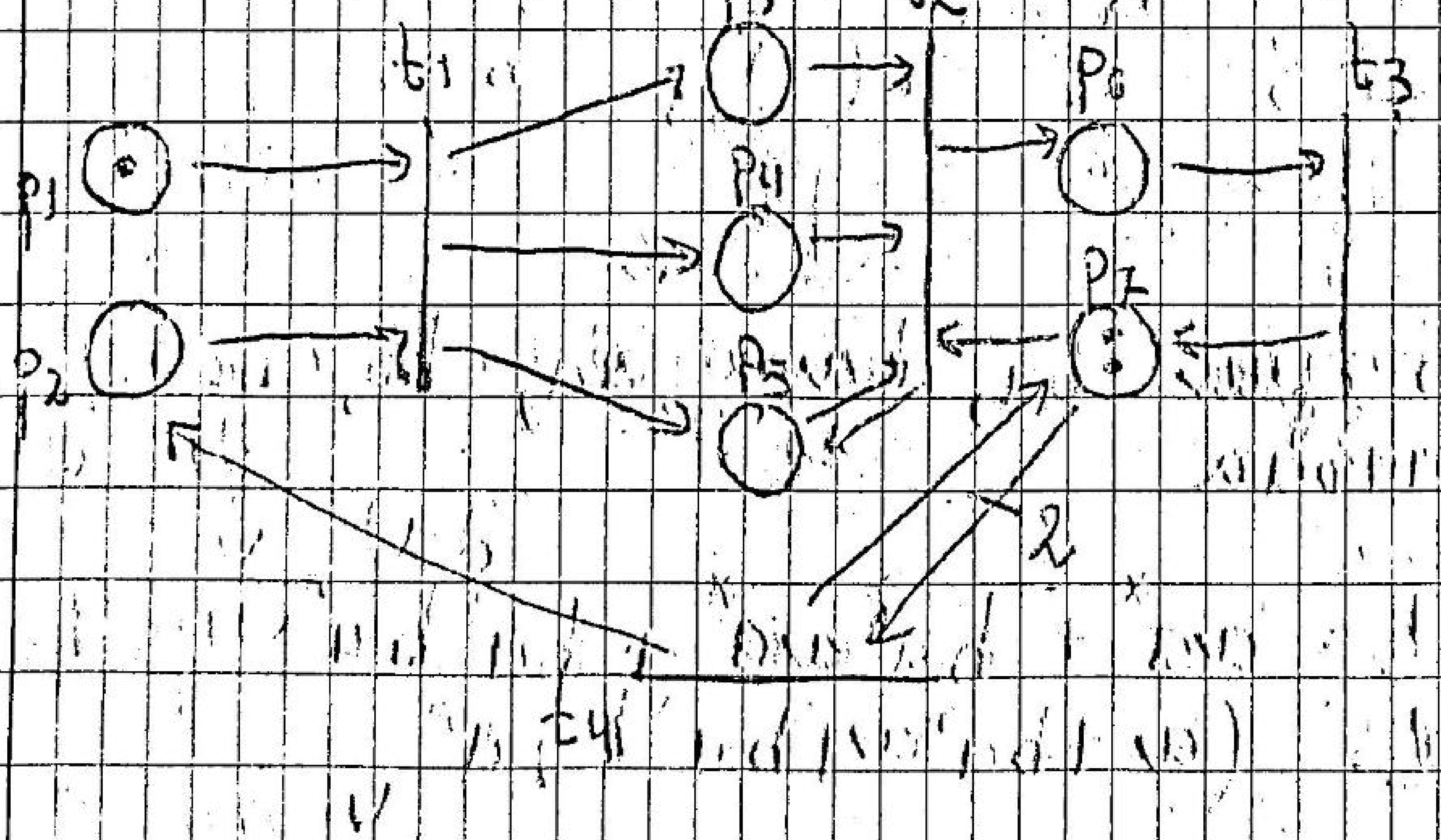
зад 3

$I(t_1) = (p_1, p_2)$ $\qquad$ $O(t_1) = (p_3, p_4, p_5)$

$I(t_2) = (p_3, p_4, p_5, p_7)$ $\qquad$ $O(t_2) = (p_5, p_6)$

$I(t_3) = (p_6)$ $\qquad$ $O(t_3) = (p_7)$

$I(t_4) = (p_7, p_7)$ $\qquad$ $O(t_4) = (p_2, p_2)$



	p_1	p_2	p_3	p_4	p_5	p_6	p_7
M_0	1	0	0	0	0	0	2
t_4	1	1	0	0	0	0	1
t_1	0	0	1	1	1	0	1
t_2	0	0	0	0	1	1	0
t_3	0	0	0	0	1	0	1

блокада

3ag 4

a) aba, aaa, aaa, aa ba, a b aa, ...

б) $L = aa^*ba + cca + ab^*aa$

$L = (aa^*b + cc + ab^*a)\, a$

(under the bracket: F)

в)

$L = Fa$

$F = aa^*b + cc + ab^*a$

$F = \underbrace{aa^*}_{B} b$

$F = Bb$

$B = aa^*$

$n = 0 \quad B = a$

$n = 1 \quad B = aa = Ba$

$F = \underbrace{c}_{C} c \quad C = c$

$F = Cc$

$F = \underbrace{ab^*}_{D} a$

$F = Da$

$D = ab^*$

$n = 0 \quad D = a$

$n = 1 \quad D = ab = Db$

$P_1: S \to Fa$
$P_2: F \to Bb$
$P_3: B \to a$
$P_4: B \to Ba$
$P_5: C \to c$
$P_6: F \to Cc$
$P_7: F \to Da$
$P_8: D \to a$
$P_9: D \to Db$

зад5

а) aab, aaba, aa, aaa, aba

б) $L = aaba^* + aaa^* + abb^*aa^*$

$L = (aab + aa + abb^*a)a^*$

$L = \underbrace{a(ab + a + bb^*a)}_{F}a^*$

в)

$L = Fa^*$

$n=0 \quad L = F$

$n=1 \quad L = Fa$

$F = a\underbrace{(ab + a + bb^*a)}_{B}$

$F = aB$

$B = ab + a + bb^*a$

$B = a\underbrace{b}_{C} \quad C = b \qquad B = a$

$B = aC$

$B = \underbrace{bb^*}_{D}a$

$B = Da$

$D = bb^*$

$n=0 \quad D = b$

$n=1 \quad D = bb = bD$

$p_1: S \to F$
$p_2: S \to Fa$
$p_3: F \to aB$
$C \to b$
$p_4: B \to aC$
$p_5: B \to a$
$p_6: B \to Da$
$p_7: D \to b$
$p_8: D \to bD$

Зад 6

$L = a(ab)^n \mid, n \geq 1$

$L = aA$ $\quad$ $S \to aA$

$A = (ab)^n$ $\quad$ $A \to aB$

$n = 1$ $\quad$ $A = aB$ $\quad$ $B \to b$

$C \to Aa$

$B = b$ $\quad$ $A \to Cb$

$n = 2$ $\quad$ $A = abab$

$A = Aab$ $\quad$ $A = Cb$

$C = Aa$

Зад 7

$L = ab + bbb^*ab + bab =$ $\quad$ $\Lambda + RR^* = R^*$

$= (\Lambda + bbb^* + b)ab =$

$= (\Lambda + b(bb^* + \Lambda))ab =$

$= (\Lambda + bb^*)ab =$

$= b^*ab$

$L = Ab$ $\quad$ $p_1: S \to Ab$

$A = b^*a$ $\quad$ $p_2: A \to a$

$n = 0$ $\quad$ $A = a$ $\quad$ $p_3: A \to bA$

$n = 1$ $\quad$ $A = ba = bA$