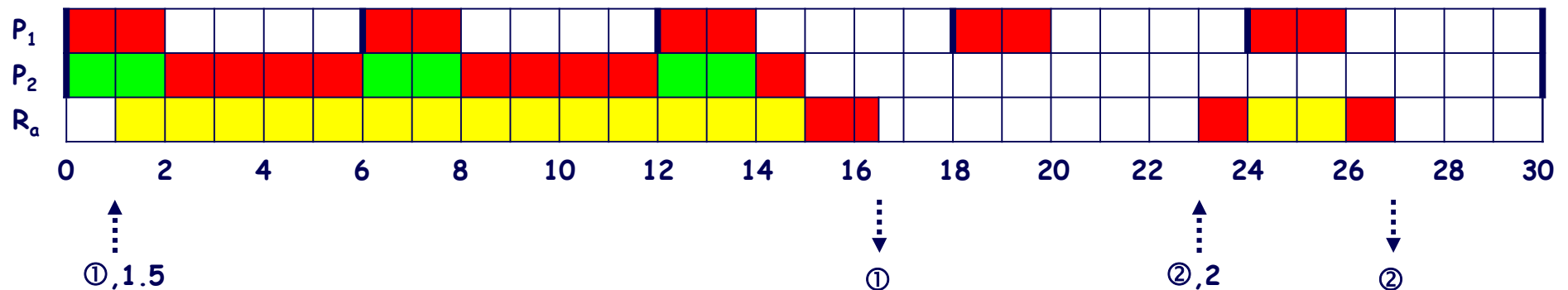


# SERVIZIO IN BACKGROUND ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |



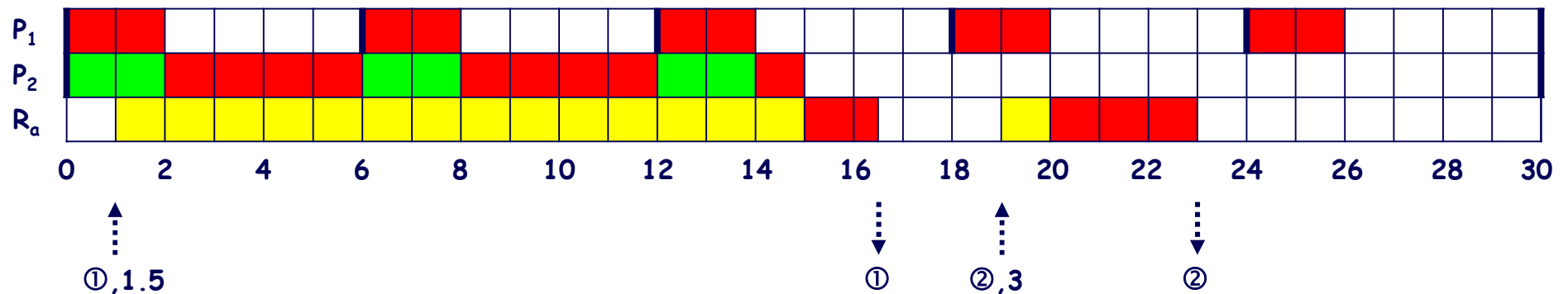
|       |      |         |         |
|-------|------|---------|---------|
| $P_i$ | Idle | Ready   | Running |
| $R_a$ | None | Pending | Served  |

## ... SERVIZIO IN BACKGROUND

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |



|       |      |         |         |
|-------|------|---------|---------|
| $P_i$ | Idle | Ready   | Running |
| $R_a$ | None | Pending | Served  |

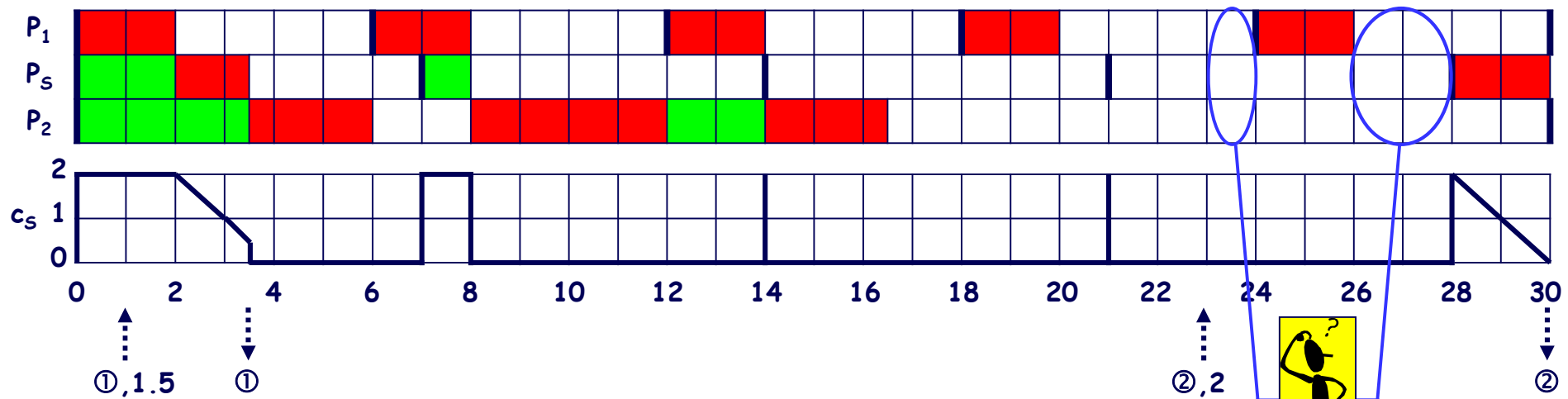
# SERVIZIO TRAMITE POLLING SERVER ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |



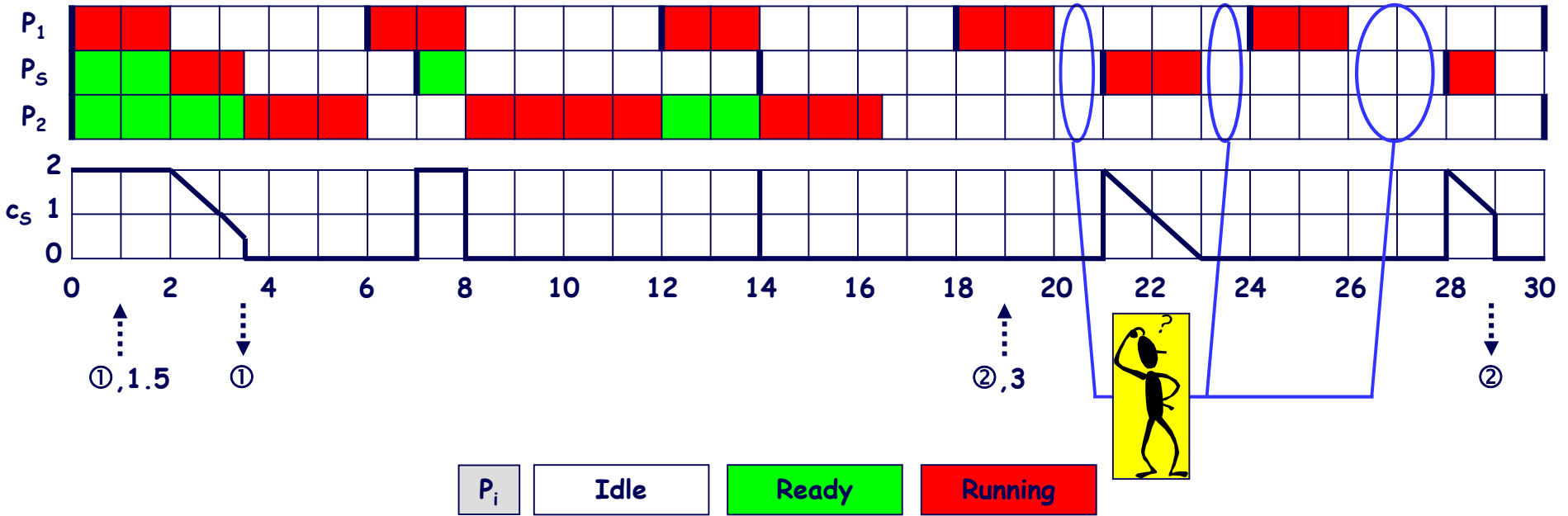
... SERVIZIO TRAMITE POLLING SERVER ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

**strategia di schedulazione: RMPO**

|          | a [ms] | s [ms] |
|----------|--------|--------|
| $R_{a1}$ | 1      | 1.5    |
| $R_{a2}$ | 19     | 3      |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$



# ... SERVIZIO TRAMITE POLLING SERVER ...

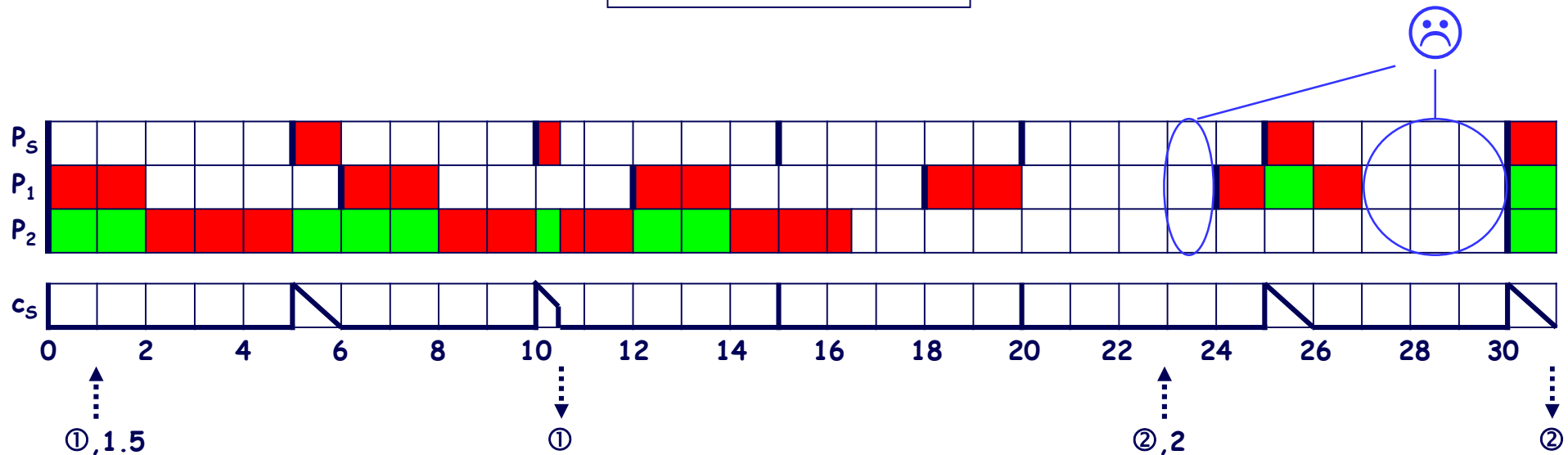
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |



# ... SERVIZIO TRAMITE POLLING SERVER ...

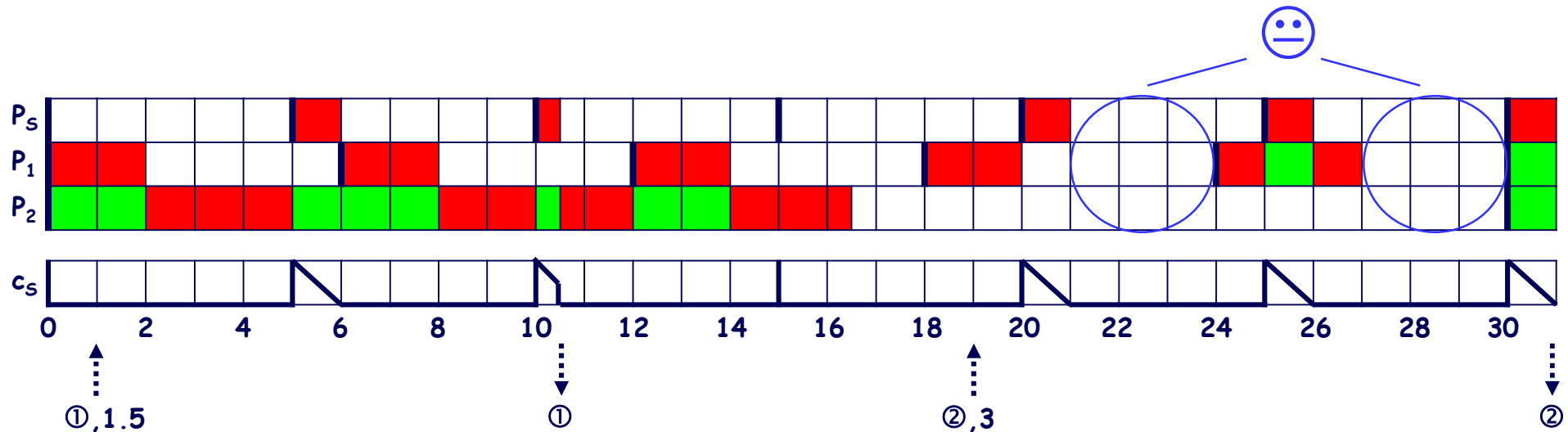
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

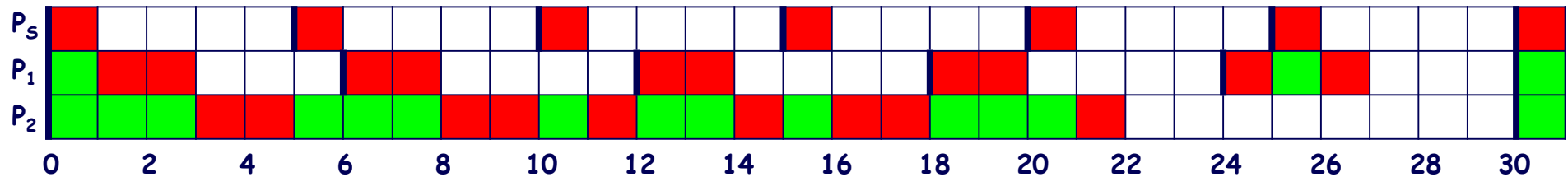
$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$



# ... SERVIZIO TRAMITE POLLING SERVER

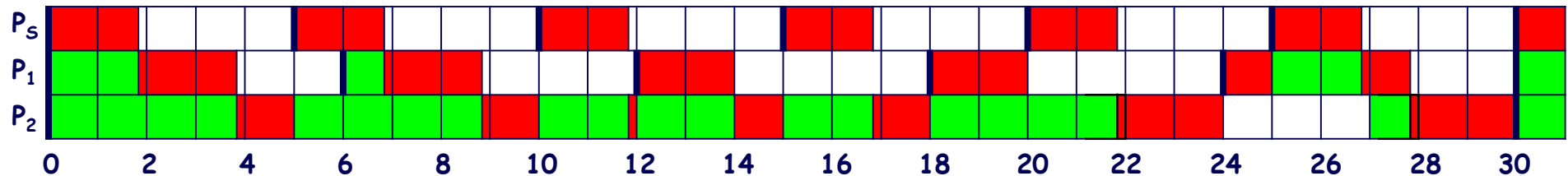
| $A_i$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

Si verifichi se, indipendentemente dalla effettiva distribuzione temporale e dal tempo di servizio delle richieste aperiodiche, la loro gestione tramite Polling Server ( $T_s = 5$  ms,  $C_s = 1$  ms) compromette o meno la schedulabilità dei due processi  $P_1$  e  $P_2$ , identificando nell'uno o nell'altro caso il valore massimo che  $C_s$  può assumere, a parità di  $T_s$ , onde (continuare a) prevenire tale inaccettabile circostanza.



|    |    |
|----|----|
| sì | no |
|    | x  |

$$C_s \leq 1.83 \text{ ms}$$



$$U_s \leq (N+1)(2^{1/(N+1)} - 1) - U_p \underset{N \rightarrow \infty}{=} \ln 2 - U_p$$

$$C_s \leq 0.73 \text{ ms}$$

$$U_s \leq \frac{2}{(1 + U_p/N)^N} - 1 \underset{N \rightarrow \infty}{=} \frac{2}{e^{U_p}} - 1$$

$$C_s \leq 0.78 \text{ ms}$$

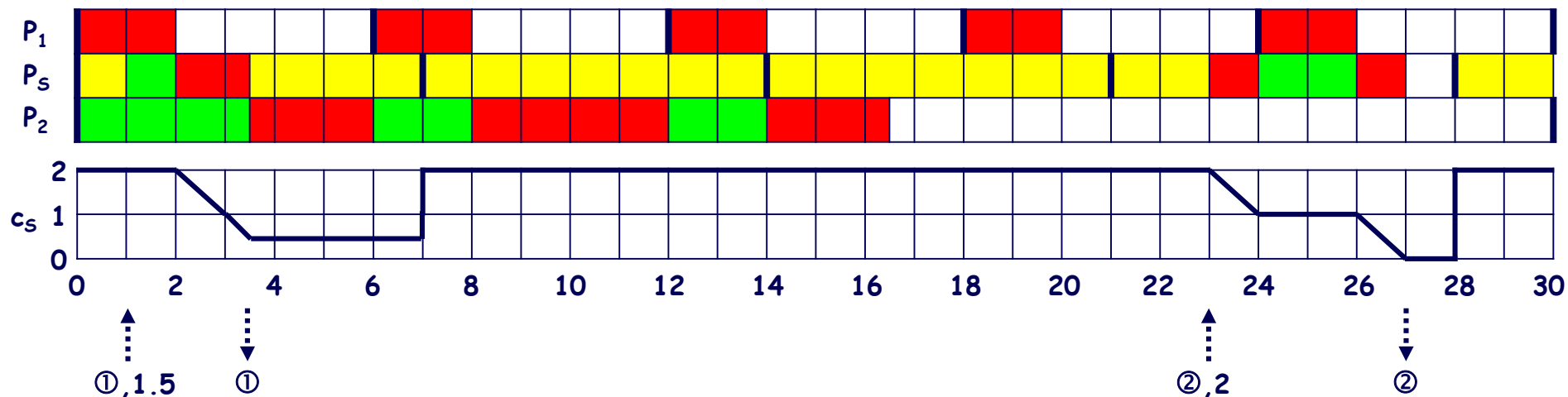
# SERVIZIO TRAMITE DEFERRABLE SERVER ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |





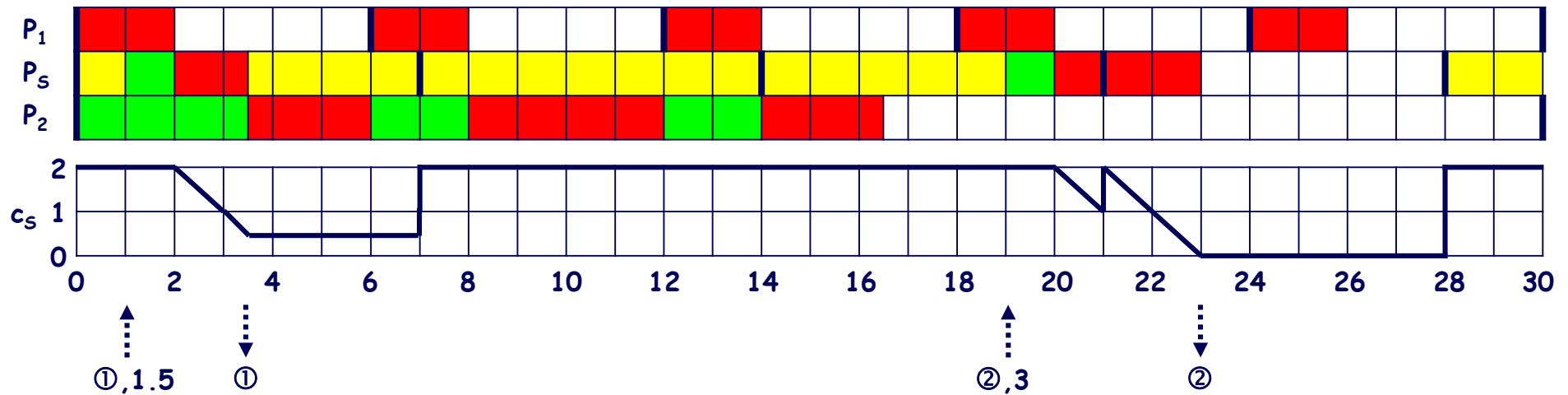
# ... SERVIZIO TRAMITE DEFERRABLE SERVER ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$



# ... SERVIZIO TRAMITE DEFERRABLE SERVER ...

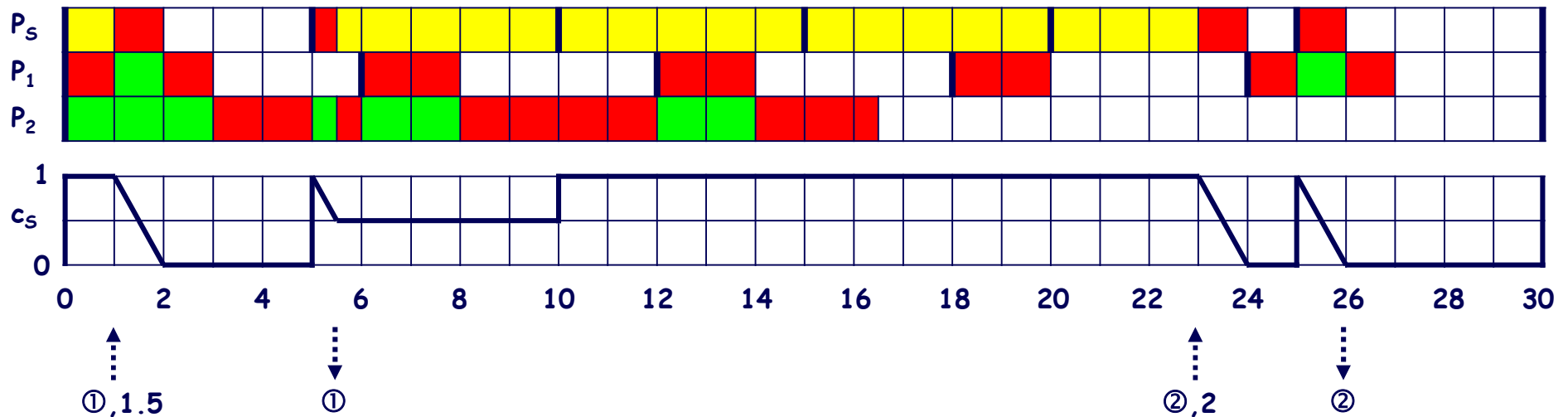
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$



# ... SERVIZIO TRAMITE DEFERRABLE SERVER

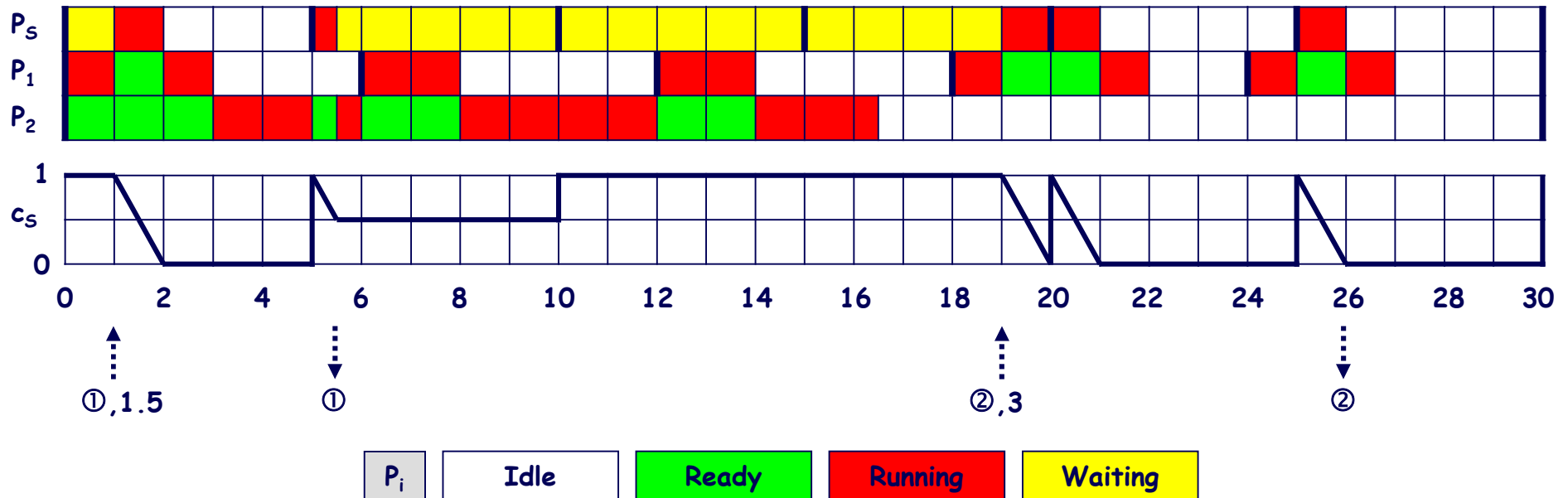
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

strategia di schedulazione: RMPO

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

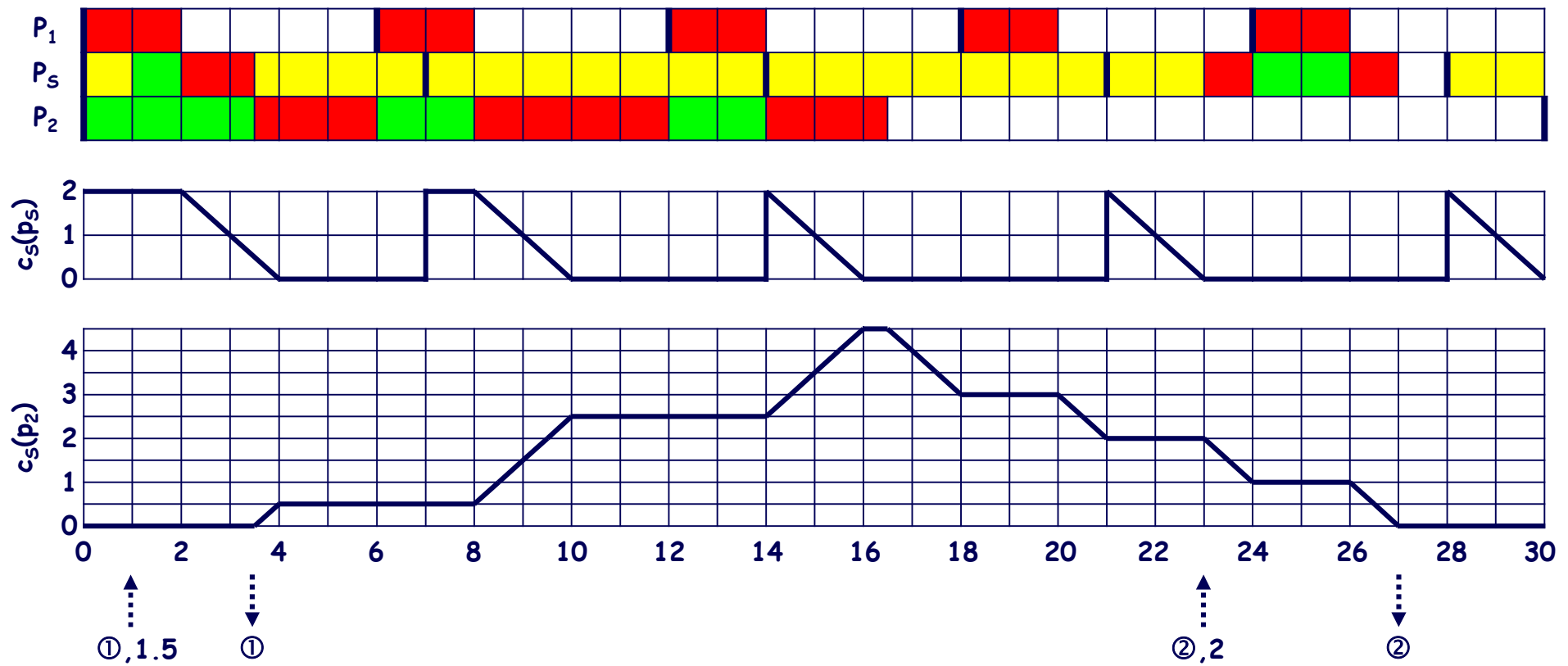


# SERVIZIO TRAMITE PES ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |

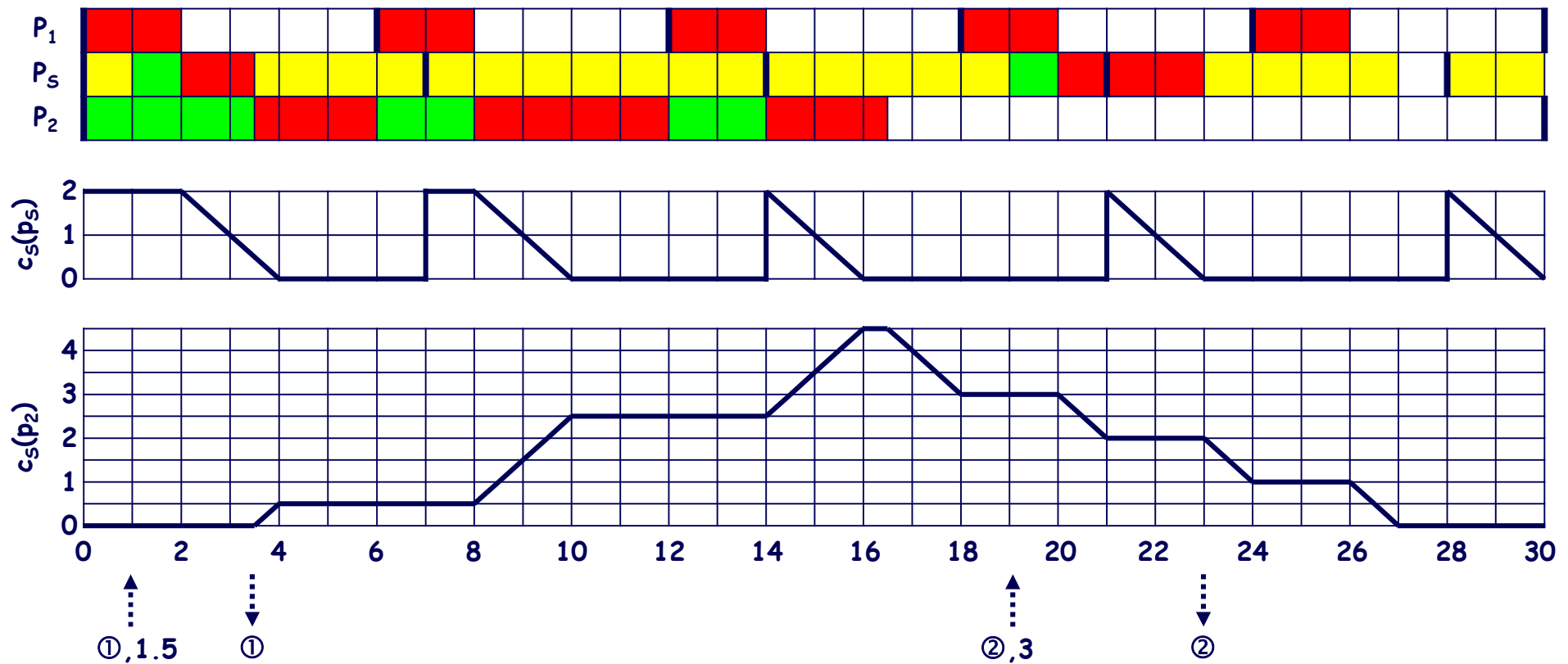


# ... SERVIZIO TRAMITE PES ...

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |



# ... SERVIZIO TRAMITE PES ...

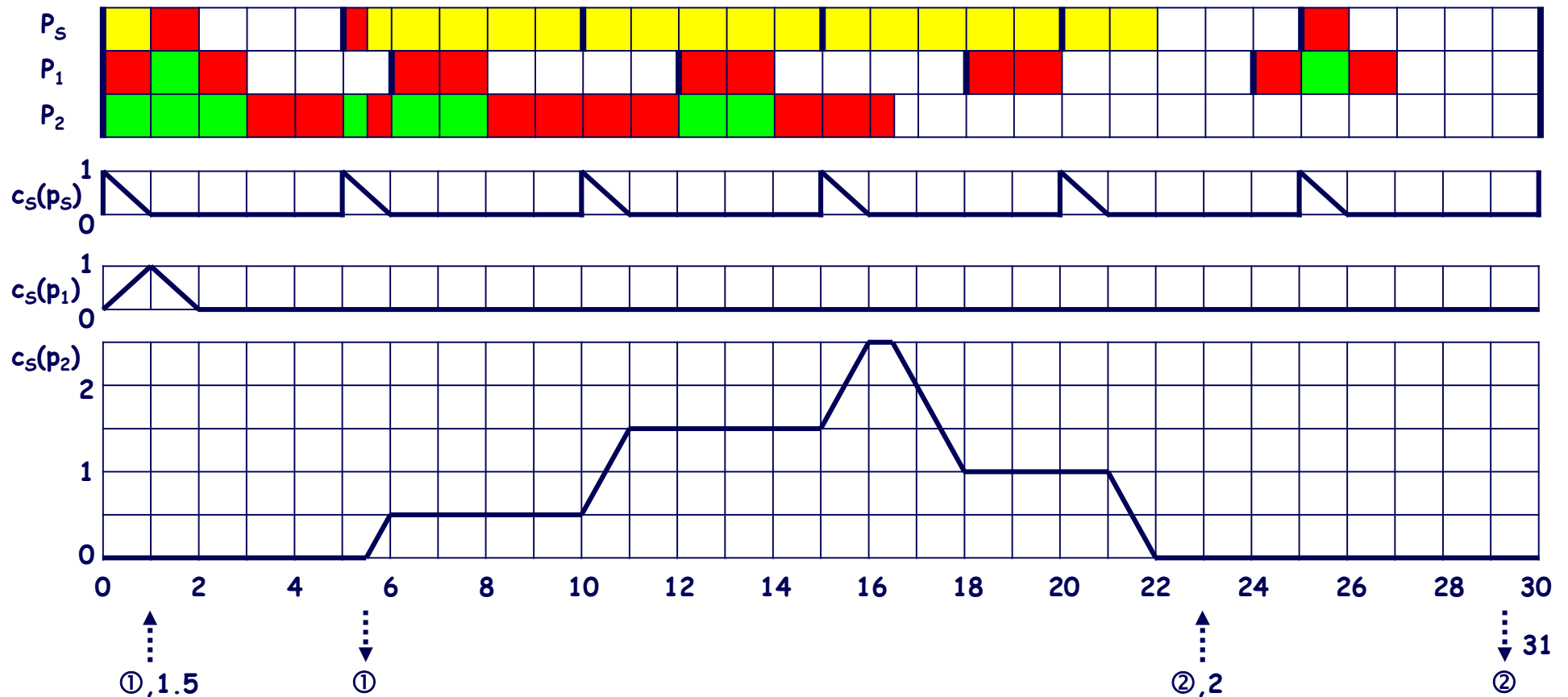
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |



# ... SERVIZIO TRAMITE PES

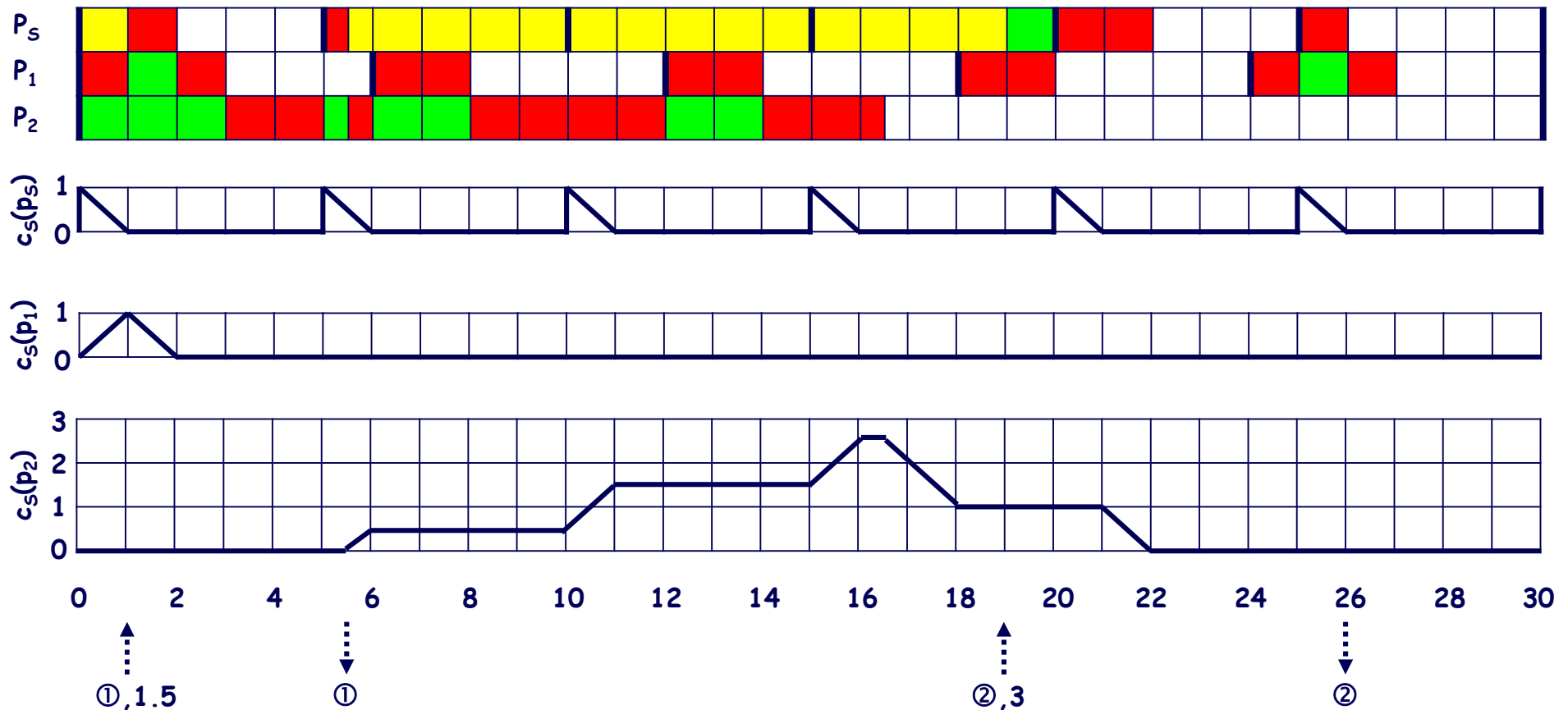
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |



Scheduling di processi SRT 15

# SERVIZIO TRAMITE SS ...

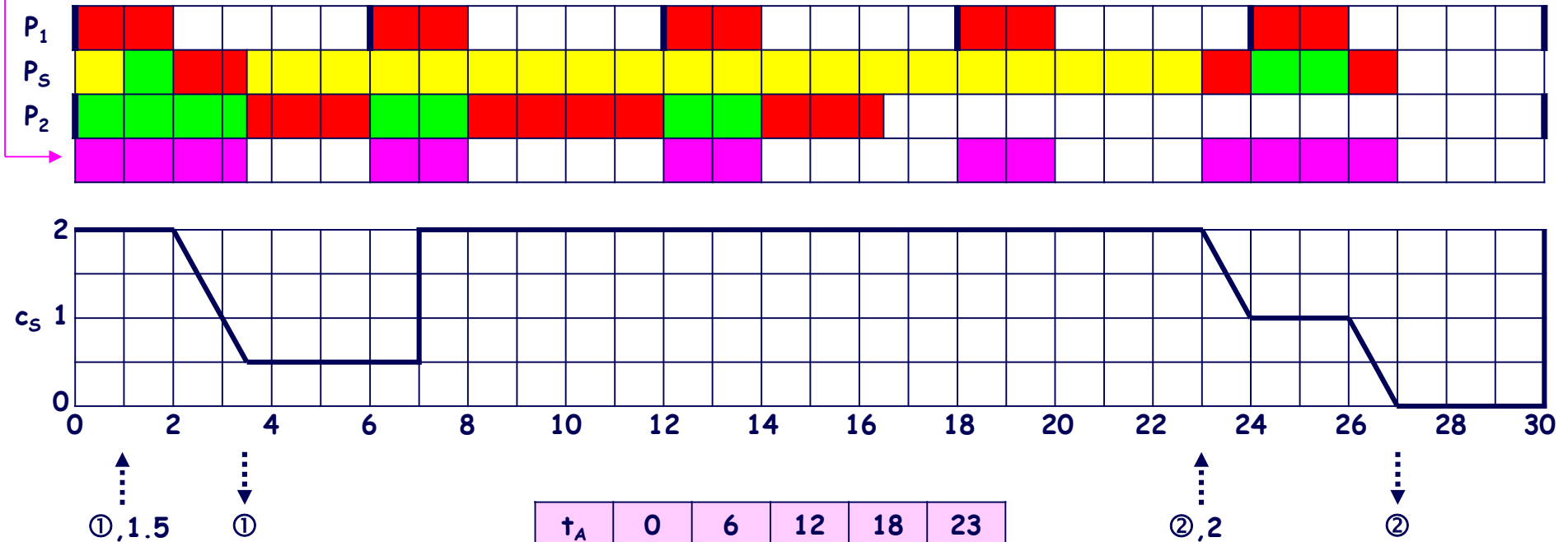
| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |

$P_S$  attivo  
&  
 $c_S > 0$



|       |     |   |    |    |    |
|-------|-----|---|----|----|----|
| $t_A$ | 0   | 6 | 12 | 18 | 23 |
| $t_D$ | 3.5 | 8 | 14 | 20 | 27 |
| RA    | 1.5 | 0 | 0  | 0  | 2  |
| RT    | 7   | - | -  | -  | 30 |



# ... SERVIZIO TRAMITE SS ...

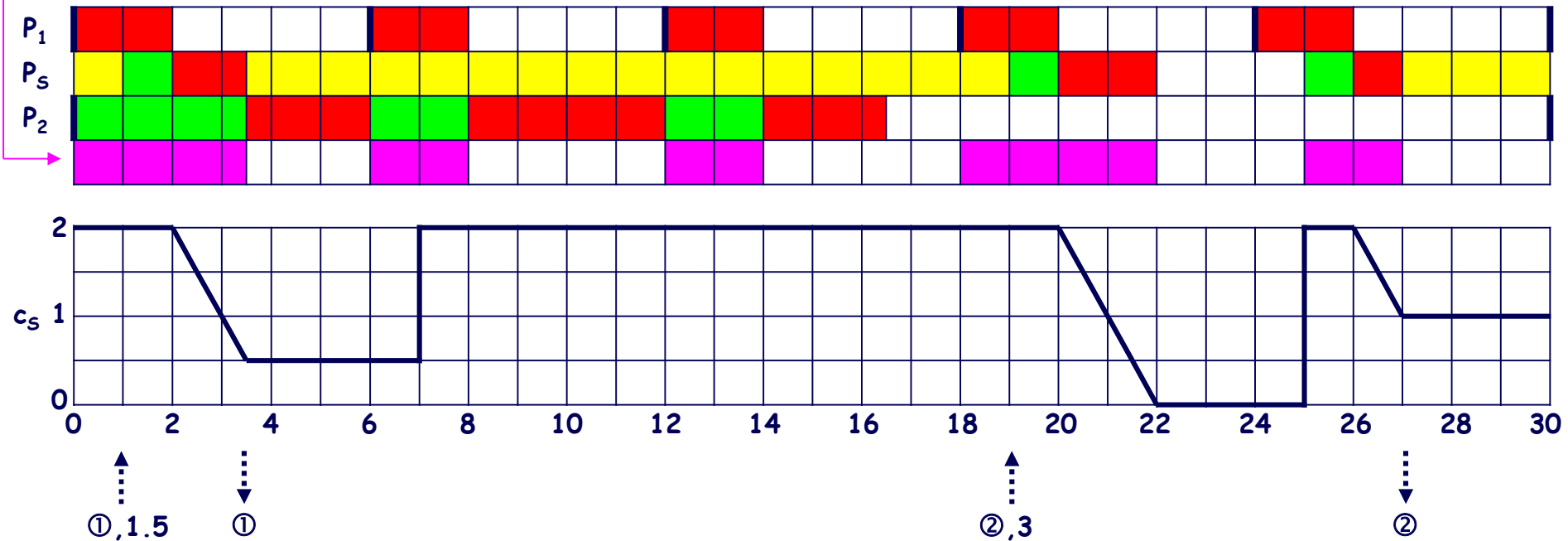
| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 7 \text{ ms}, C_S = 2 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |

$P_S$  attivo  
&  
 $c_S > 0$



|       |     |   |    |    |    |
|-------|-----|---|----|----|----|
| $t_A$ | 0   | 6 | 12 | 18 | 25 |
| $t_D$ | 3.5 | 8 | 14 | 22 | 27 |
| RA    | 1.5 | 0 | 0  | 2  | 1  |
| RT    | 7   | - | -  | 25 | 32 |

# ... SERVIZIO TRAMITE SS ...

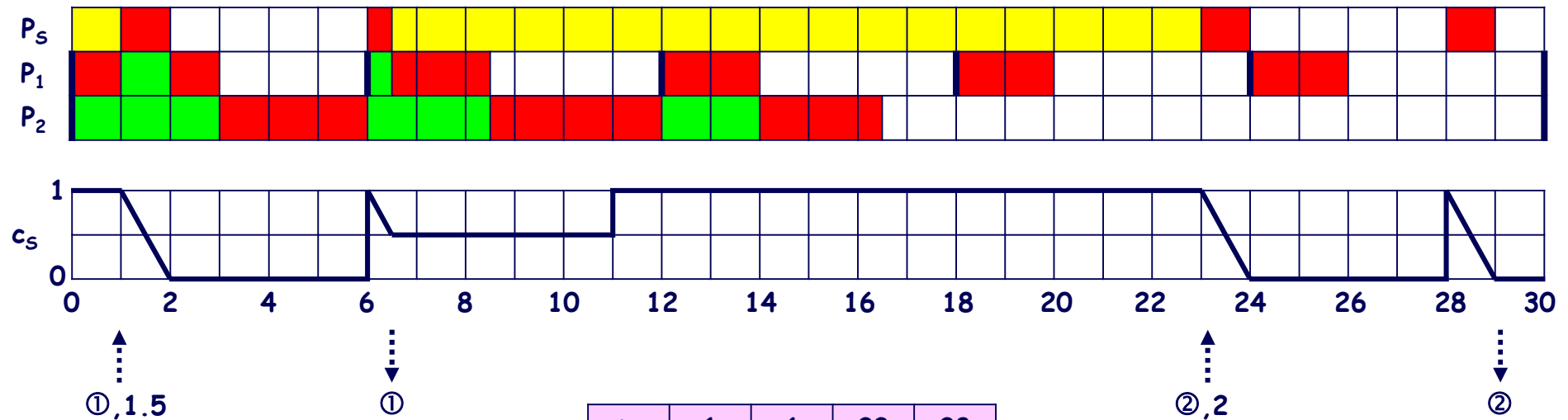
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 23       | 2        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |



|       |   |     |    |    |
|-------|---|-----|----|----|
| $t_A$ | 1 | 6   | 23 | 28 |
| $t_D$ | 2 | 6.5 | 24 | 29 |
| RA    | 1 | 0.5 | 1  | 1  |
| RT    | 6 | 11  | 28 | 33 |

# ... SERVIZIO TRAMITE SS

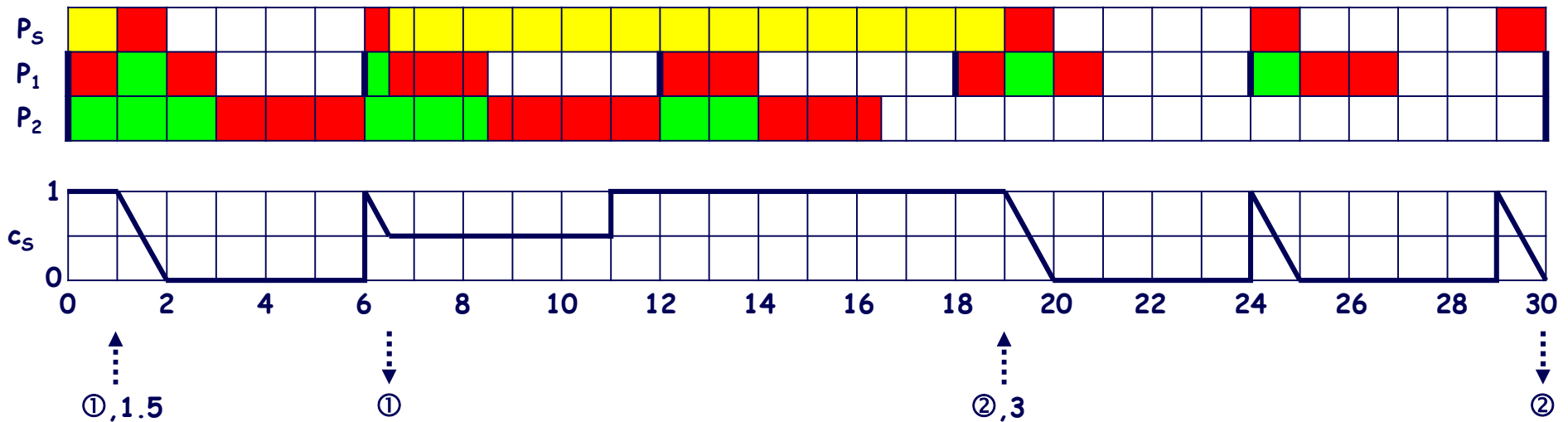
Server a massima priorità:

| $A_1$ | $C$ [ms] | $T$ [ms] |
|-------|----------|----------|
| $P_1$ | 2        | 6        |
| $P_2$ | 9        | 30       |

$P_S : T_S = 5 \text{ ms}, C_S = 1 \text{ ms}$

|          | $a$ [ms] | $s$ [ms] |
|----------|----------|----------|
| $R_{a1}$ | 1        | 1.5      |
| $R_{a2}$ | 19       | 3        |

|         |
|---------|
| Idle    |
| Ready   |
| Running |
| Waiting |



|       |   |     |    |    |    |
|-------|---|-----|----|----|----|
| $t_A$ | 1 | 6   | 19 | 24 | 29 |
| $t_D$ | 2 | 6.5 | 20 | 25 | 30 |
| RA    | 1 | 0.5 | 1  | 1  | 1  |
| RT    | 6 | 11  | 24 | 29 | 34 |