Periodic

t_i - task#
r_i - arrival time
e_i = execution time
p_i = period
D_i = relative deadline

3. (20 points) Cyclic Executive and cyclic schedule

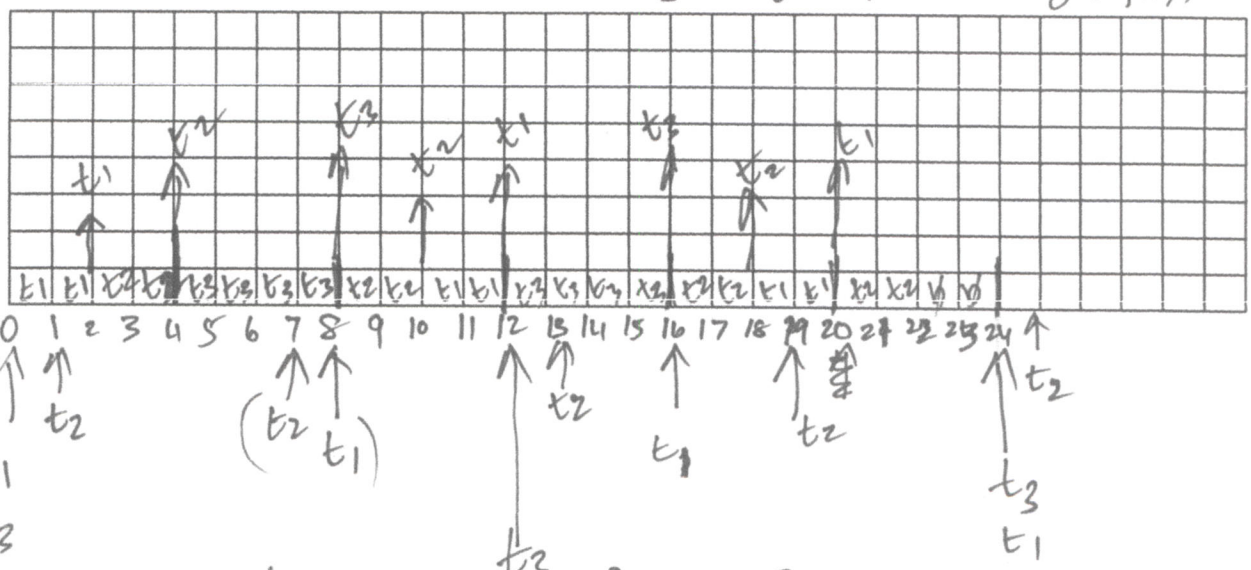
For the task set given below design a cyclic schedule: (i) determine the hyper-period (ii) determine frame size, (iii) provide a timing chart and (iv) a cyclic (executive) schedule.

arrival

ti	ri	ei	pi	Di
t1	0	2	8	6
t2	1	2	6	6
t3	0	4	12	10

(0) $\sum \frac{e_i}{p_i} \leq 1$

$= \frac{2}{8} + \frac{2}{6} + \frac{4}{12} = 0.25 + 0.33 + 0.33$
0.91 //



(i) $H \geq lcm(8, 6, 12) = 24$

frame size (ii) $f \geq \max(e_i) \geq \max(2, 2, 4) = 4$, 5, 6 ...

(iii) Verify $2f - \gcd(p_i, f) \leq D_i$

$8 - \gcd(8, 4) \leq 6$ $\quad 8 - 4 \leq 6$ ✓
$8 - \gcd(6, 4) \leq 6$ $\quad 8 - 2 \leq 6$ ✓
$8 - \gcd(12, 4) \leq 10$ $\quad 8 - 4 \leq 10$ ✓

(iii) See chart.

(iv)

```
{t1(2); t2(2)};
{t3(4);
{t2(2); t1(2)};
{t3(4)};
{t2(2); t1(2);
{t2(2); b(1); b(1)}
```