Theory Assignment

1. $T_1(15,1,14)$ $T_2(20,2,26)$ $T_3(22,3)$

Requirement 1

$\quad f \geq 3$

Requirement 2

$f = \{22, 20, 15, 11, 10, 5, 4, 3, 2, 1\}$

Requirement 3 $\qquad 2f - \gcd(p_i, f) \leq D_i$

f	$(15,1,14)$	$(20,2,26)$	$(22,3)$
22	$44-1 \leq 14$ X		
20	$40-5 \leq 14$ X		
15	$30-15 \leq 14$ X		
11	$22-1 \leq 14$ X		
10	$20-5 \leq 14$ X		
5	$10-8 \leq 14$ ✓	$10-5 \leq 26$ ✓	$10-1 \leq 22$ ✓

$f = 5$ is the greatest frame size for this task set.

2. $T_1(4,1)$ $T_2(5,2,7)$ $T_3(20,5)$

Requirement 1

$f \geq 5$

Requirement 2

$f = \{20, 10, 5, 4, 2, 1\}$

Requirement 3 $2f - \gcd(p_i, f) \leq D_i$

f	$(4,1)$	$(5,2,7)$	$(20,5)$
20	$40 - 4 \leq 4$ ✗		
10	$20 - 2 \leq 4$ ✗		
5	$10 - 2 \leq 4$ ✗		
4	$8 - 4 \leq 4$ ✓	$8 - 1 \leq 7$ ✓	$8 - 4 \leq 20$ ✓

$f = 4$ for this task set however, T_3 must break into multiple parts for the task set to run feasibly.

3. $T_1(5, 0.1)$ $T_2(7,1)$ $T_3(12,6)$ $T_4(45,9)$

Requirement 1

$$f \geq 9$$

Requirement 2

$$f = \{45, 15, 12, 9, 6, 5, 4, 3, 2, 1\}$$

Requirement 3 $2f - \gcd(p_i, f) \leq D_i$

f	$(5, 0.1)$	$(7,1)$	$(12,6)$	$(45,9)$
45	$90 - 5 \leq 5$ X			
15	$30 - 5 \leq 5$ X			
12	$24 - 1 \leq 5$ X			
9	$18 - 1 \leq 5$ X			
6	$12 - 1 \leq 5$ X			
5	$10 - 5 \leq 5$ ✓	$10 - 1 \leq 7$ X		
4	$8 - 1 \leq 5$ X			
3	$6 - 1 \leq 5$ ✓	$6 - 1 \leq 7$ ✓	$6 - 3 \leq 12$ ✓	$6 - 15 \leq 45$ ✓

$f = 3$ is the largest frame size for this task set, however T_3 and T_4 must both break into multiple parts.