

LAMPIRAN A

Data – data yang digunakan dalam pengolahan data adalah sebagai berikut :

1. Data 1

Waktu proses :

Job	Operasi			
	1	2	3	4
1	8	7	8	6
2	5	7	8	7
3	6	5	6	6

Mesin :

Job	Operasi			
	1	2	3	4
1	3	1	4	2
2	2	1	4	3
3	1	3	2	4

Due date :

Job	DD
1	38
2	36
3	37

2. Data 2

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	13	6	7	9	9
2	14	7	13	10	6	12
3	8	11	7	9	13	11
4	13	14	9	11	5	5
5	12	7	8	15	7	11

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	4	2	3	6	5
2	3	2	5	1	4	6
3	2	5	4	3	6	1
4	1	4	2	5	6	3
5	2	1	3	6	4	5

Due date :

Job	DD
1	89
2	94
3	97
4	87
5	88

3. Data 3

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	6	7	4	8	9
2	9	8	8	7	6
3	5	4	7	8	7
4	8	6	7	9	6
5	7	9	6	8	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	4	3	1	2	5
2	1	2	3	4	5
3	1	4	3	5	2
4	5	1	4	3	2
5	4	5	1	2	3

Due date :

Job	DD
1	48
2	50
3	52
4	53
5	51

4. Data 4

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	9	10	8	7	9
2	8	6	11	5	8	7
3	6	10	8	7	7	8
4	6	11	5	12	8	10

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	5	4	3	1	6	2
2	3	4	2	5	1	6
3	6	5	3	1	2	4
4	1	3	5	2	4	6

Due date :

Job	DD
1	70
2	62
3	58
4	67

5. Data 5

Waktu proses :

Job	Operasi			
	1	2	3	4
1	6	10	5	5
2	8	4	6	7
3	7	3	4	8
4	5	6	8	3
5	4	7	7	7
6	6	5	6	7

Mesin :

Job	Operasi			
	1	2	3	4
1	4	2	1	3
2	4	3	2	1
3	3	1	2	4
4	2	1	3	4
5	2	3	1	4
6	1	3	4	2

Due date :

Job	DD
1	41
2	46
3	42
4	44
5	51
6	50

6. Data 6

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	13	5	7	9	9
2	14	7	13	10	6	14
3	8	11	7	9	13	11
4	13	14	9	11	7	6
5	12	7	8	8	7	6
6	7	10	12	14	10	14

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	4	2	3	6	5
2	3	2	5	1	4	6
3	2	5	4	3	6	1
4	1	4	2	5	6	3
5	2	1	3	6	4	5
6	5	6	2	4	1	3

Due date :

Job	DD
1	90
2	95
3	91
4	92
5	89
6	88

7. Data 7

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	10	10	13	9	11
2	5	5	7	11	11
3	13	13	11	8	10
4	7	7	14	14	14
5	9	9	7	9	14
6	8	8	10	6	11

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	4	2	1
2	1	4	5	2	3
3	1	2	4	3	5
4	4	5	2	1	3
5	3	4	2	5	1
6	1	2	3	4	5

Due date :

Job	DD
1	80
2	85
3	79
4	98
5	84
6	82

8. Data 8

Waktu proses :

Job	Operasi			
	1	2	3	4
1	3	7	7	2
2	3	4	4	6
3	5	2	3	4
4	4	2	4	7

Mesin :

Job	Operasi			
	1	2	3	4
1	1	2	3	4
2	2	4	1	3
3	4	2	1	3
4	2	3	1	4

Due date :

Job	DD
1	36
2	26
3	21
4	20

9. Data 9

Waktu proses :

Job	Operasi			
	1	2	3	4
1	6	6	7	5
2	6	4	4	7
3	5	7	7	4
4	4	5	6	3
5	3	7	3	4

Mesin :

Job	Operasi			
	1	2	3	4
1	1	4	3	2
2	1	2	4	3
3	1	3	4	2
4	3	1	4	2
5	3	2	4	1

Due date :

Job	DD
1	35
2	38
3	37
4	36
5	30

10. Data 10

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	7	7	6	7	14	5
2	7	5	6	4	14	6
3	10	7	14	7	11	4
4	9	4	9	6	11	6

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	5	6	1	2	4	3
2	1	2	4	5	3	6
3	2	3	1	5	4	6
4	4	3	6	5	1	2

Due date :

Job	DD
1	50
2	55
3	59
4	51

11. Data 11

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	14	3	7	3	6	2
2	11	4	13	4	11	4
3	6	7	11	4	11	4
4	6	4	11	8	14	4
5	14	7	10	7	7	4

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	3	6	4	5	2
2	1	6	4	5	3	2
3	3	5	6	4	1	2
4	6	1	2	5	4	3
5	6	4	2	1	3	5

Due date :

Job	DD
1	60
2	68
3	64
4	73
5	67

12. Data 12

Waktu proses :

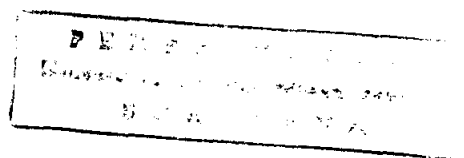
Job	Operasi		
	1	2	3
1	5	5	6
2	8	3	5
3	6	6	6

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	3	1	2
3	1	2	3

Due date :

Job	DD
1	25
2	24
3	23



13. Data 13

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	11	2	8	5	5
2	12	9	7	13	7	4
3	6	5	4	11	10	8

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	4	3	2	6	5	1
2	1	5	3	2	6	4
3	3	2	4	1	5	6

Due date :

Job	DD
1	46
2	58
3	56

14. Data 14

Waktu proses :

Job	Operasi			
	1	2	3	4
1	10	6	5	5
2	8	4	7	4
3	11	5	10	8

Mesin :

Job	Operasi			
	1	2	3	4
1	4	2	1	3
2	1	4	2	3
3	3	2	4	1

Due date :

Job	DD
1	30
2	38
3	40

15. Data 15

Waktu proses :

Job	Operasi		
	1	2	3
1	7	5	3
2	6	6	6
3	4	5	6

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	2	3	1
3	1	2	3

Due date :

Job	DD
1	19
2	21
3	22

16. Data 16

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	8	6	9	7	10
2	10	7	6	8	9
3	11	8	7	7	9

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	2	1	4
2	5	1	3	4	2
3	2	5	4	1	3

Due date :

Job	DD
1	52
2	45
3	49

17. Data 17

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	7	9	9	6	8
2	5	7	7	10	7
3	4	7	9	9	9

Mesin :

Job	Operasi				
	1	2	3	4	5
1	2	1	3	4	5
2	1	5	3	2	4
3	3	4	1	2	5

Due date :

Job	DD
1	48
2	45
3	55

18. Data 18

Waktu proses :

Job	Operasi		
	1	2	3
1	7	9	5
2	9	6	8
3	6	7	7
4	8	5	7

Mesin :

Job	Operasi		
	1	2	3
1	2	3	1
2	1	2	3
3	1	3	2
4	3	2	1

Due date :

Job	DD
1	32
2	35
3	30
4	29

19. Data 19

Waktu proses :

Job	Operasi			
	1	2	3	4
1	10	12	10	9
2	9	12	11	8
3	8	10	9	9
4	11	9	11	13

Mesin :

Job	Operasi			
	1	2	3	4
1	3	4	2	1
2	2	4	3	1
3	1	3	2	4
4	1	2	4	3

Due date :

Job	DD
1	60
2	45
3	55
4	61

20. Data 20

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	7	10	5	11
2	7	8	12	10	8
3	7	6	9	9	9
4	10	9	7	11	8

Mesin :

Job	Operasi				
	1	2	3	4	5
1	2	3	1	5	4
2	3	1	5	4	2
3	1	3	5	4	2
4	2	5	3	1	4

Due date :

Job	DD
1	70
2	71
3	65
4	66

21. Data 21

Waktu proses :

Job	Operasi		
	1	2	3
1	9	11	10
2	12	9	13
3	15	13	11
4	14	12	10
5	11	14	14

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	2	1	3
3	1	2	3
4	3	2	1
5	2	1	3

Due date :

Job	DD
1	70
2	68
3	82
4	66
5	75

22. Data 22

Waktu proses :

Job	Operasi			
	1	2	3	4
1	8	10	6	9
2	5	9	10	12
3	12	10	8	6
4	7	8	10	11
5	6	9	10	11

Mesin :

Job	Operasi			
	1	2	3	4
1	1	4	2	3
2	2	3	1	4
3	1	2	4	3
4	3	4	1	2
5	4	1	2	3

Due date :

Job	DD
1	60
2	65
3	80
4	68
5	66

23. Data 23

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	12	10	8	6
2	10	6	9	10	11
3	9	10	13	10	7
4	11	9	10	8	12
5	10	10	7	10	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	4	2	3	5
2	1	2	5	4	3
3	2	3	1	5	4
4	2	1	3	4	5
5	3	5	4	1	2

Due date :

Job	DD
1	69
2	68
3	78
4	80
5	66

24. Data 24

Waktu proses :

Job	Operasi		
	1	2	3
1	12	7	11
2	8	10	10
3	10	7	9
4	6	9	11
5	12	8	10
6	7	12	8

Mesin :

Job	Operasi		
	1	2	3
1	1	2	3
2	2	3	1
3	2	1	3
4	1	3	2
5	3	1	2
6	2	3	1

Due date :

Job	DD
1	68
2	48
3	57
4	59
5	50
6	55

25. Data 25

Waktu proses :

Job	Operasi			
	1	2	3	4
1	5	4	6	7
2	3	7	6	3
3	5	5	7	6
4	4	7	7	4
5	6	5	3	6
6	5	6	6	6

Mesin :

Job	Operasi			
	1	2	3	4
1	2	1	3	4
2	1	2	4	3
3	2	4	3	1
4	3	2	1	4
5	1	3	2	4
6	4	1	2	3

Due date :

Job	DD
1	48
2	49
3	45
4	43
5	55
6	46

26. Data 26

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	10	8	8	10
2	6	7	10	12	8
3	10	7	9	10	10
4	10	13	10	7	6
5	7	12	5	8	6
6	6	9	8	10	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	4	3	5	2
2	1	2	4	3	5
3	2	3	4	5	1
4	3	4	1	2	5
5	2	5	1	4	3
6	5	1	2	4	3

Due date :

Job	DD
1	96
2	75
3	90
4	78
5	75
6	76

27. Data 27

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	8	11	13	9	9
2	8	7	7	10	15	12
3	10	9	9	7	8	7

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	3	2	4	5	6
2	2	4	3	5	6	1
3	2	1	4	3	6	5

Due date :

Job	DD
1	75
2	70
3	71

28. Data 28

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	9	10	8	7	9
2	8	6	11	9	8	7
3	6	9	8	7	7	8
4	6	11	5	12	8	15

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	2	1	3	5	4	6
2	1	3	4	5	6	2
3	3	1	2	4	5	6
4	2	1	4	5	3	6

Due date :

Job	DD
1	80
2	60
3	70
4	85

29. Data 29

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	14	8	10	6	9
2	10	5	9	10	12
3	9	12	10	8	6
4	9	7	8	10	11
5	10	6	5	10	11

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	3	5	2	4
2	2	5	3	4	1
3	5	1	3	2	4
4	2	4	1	3	5
5	3	5	2	4	1

Due date :

Job	DD
1	75
2	67
3	65
4	68
5	66

30. Data 30

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	12	11	14	14	17
2	10	12	15	16	16
3	13	18	15	11	10

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	2	1	4
2	5	1	3	4	2
3	2	5	4	1	3

Due date :

Job	DD
1	87
2	73
3	91

LAMPIRAN B

Iterasi penjadualan dengan metode *forward* untuk soal 1 :

1. *Earliest Due Date*

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)27

(St) 1 3 4, (Cj) 27, (Tij) 8

Stage 7

Waktu Mesin

(1)20 (2)19 (3)28 (4)35

(St) 1 4 2, (Cj) 35, (Tij) 6

Stage 8

Waktu Mesin

(1)20 (2)41 (3)28 (4)35

Biaya Earlines = 18

Biaya Tardines = 6

Total Biaya = 24

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (27), akhir (35)

1 4 2 = Awal (35), akhir (41)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

Job 3

3 1 1 = Awal (0), akhir (6)

3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

3 4 4 = Awal (21), akhir (27)

2. Shortest Processing Time

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)27

(St) 1 3 4, (Cj) 27, (Tij) 8

Stage 7

Waktu Mesin

(1)20 (2)19 (3)28 (4)35

(St) 1 4 2, (Cj) 35, (Tij) 6

Stage 8

Waktu Mesin

(1)20 (2)41 (3)28 (4)35

Biaya Earlines = 18

Biaya Tardines = 6

Total Biaya = 24

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (27), akhir (35)

1 4 2 = Awal (35), akhir (41)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

Job 3

3 1 1 = Awal (0), akhir (6)

3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

3 4 4 = Awal (21), akhir (27)

3. S / O P N

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)29

(St) 1 4 2, (Cj) 29, (Tij) 6

(St) 3 4 4, (Cj) 29, (Tij) 6

Stage 7

Waktu Mesin

(1)20 (2)35 (3)28 (4)35

Biaya Earlines = 13

Biaya Tardines = 0

Total Biaya = 13

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (21), akhir (29)

1 4 2 = Awal (29), akhir (35)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

Job 3

3 1 1 = Awal (0), akhir (6)

3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

3 4 4 = Awal (29), akhir (35)

Iterasi penjadualan dengan metode *forward* untuk soal 2 :

1. Earliest Due Date

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12

(St) 2 1 3, (Cj) 0, (Tij) 14

(St) 3 1 2, (Cj) 0, (Tij) 8

(St) 4 1 1, (Cj) 0, (Tij) 13

(St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)13 (2)12 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12

(St) 2 2 2, (Cj) 14, (Tij) 7

(St) 3 1 2, (Cj) 12, (Tij) 8

(St) 4 2 4, (Cj) 13, (Tij) 14

(St) 5 2 1, (Cj) 13, (Tij) 7

Stage 3

Waktu Mesin

(1)13 (2)20 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12

(St) 2 2 2, (Cj) 20, (Tij) 7

(St) 3 2 5, (Cj) 20, (Tij) 11

(St) 4 2 4, (Cj) 13, (Tij) 14

(St) 5 2 1, (Cj) 13, (Tij) 7

Stage 4

Waktu Mesin

(1)20 (2)20 (3)14 (4)27 (5)0 (6)0

(St) 1 1 1, (Cj) 20, (Tij) 12

(St) 2 2 2, (Cj) 20, (Tij) 7

(St) 3 2 5, (Cj) 20, (Tij) 11

(St) 4 3 2, (Cj) 27, (Tij) 9

(St) 5 3 3, (Cj) 20, (Tij) 8

Stage 5

Waktu Mesin

(1)32 (2)27 (3)28 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 3 2, (Cj) 27, (Tij) 9

(St) 5 4 6, (Cj) 28, (Tij) 15

Stage 6

Waktu Mesin

(1)32 (2)36 (3)28 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 4 5, (Cj) 36, (Tij) 11

(St) 5 4 6, (Cj) 28, (Tij) 15

Stage 7

Waktu Mesin

(1)32 (2)36 (3)28 (4)27 (5)31 (6)43

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 4 5, (Cj) 36, (Tij) 11

(St) 5 5 4, (Cj) 43, (Tij) 7

Stage 8

Waktu Mesin

(1)32 (2)36 (3)28 (4)38 (5)44 (6)43

(St) 1 2 4, (Cj) 38, (Tij) 13

(St) 2 4 1, (Cj) 44, (Tij) 10

(St) 3 4 3, (Cj) 38, (Tij) 9

(St) 4 4 5, (Cj) 44, (Tij) 11

(St) 5 5 4, (Cj) 43, (Tij) 7

Stage 9

Waktu Mesin

(1)32 (2)36 (3)47 (4)51 (5)44 (6)43

(St) 1 3 2, (Cj) 51, (Tij) 6

(St) 2 4 1, (Cj) 44, (Tij) 10

(St) 3 5 6, (Cj) 47, (Tij) 13

(St) 4 4 5, (Cj) 44, (Tij) 11

(St) 5 5 4, (Cj) 51, (Tij) 7

Stage 10

Waktu Mesin

(1)54 (2)36 (3)47 (4)51 (5)55 (6)43

(St) 1 3 2, (Cj) 51, (Tij) 6

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 5 6, (Cj) 47, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 51, (Tij) 7

Stage 11

Waktu Mesin

(1)54 (2)36 (3)47 (4)51 (5)55 (6)60

(St) 1 3 2, (Cj) 51, (Tij) 6
 (St) 2 5 4, (Cj) 54, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 5 4, (Cj) 51, (Tij) 7

Stage 12

Waktu Mesin

(1)54 (2)57 (3)47 (4)58 (5)55 (6)60

(St) 1 4 3, (Cj) 57, (Tij) 7
 (St) 2 5 4, (Cj) 58, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 6 5, (Cj) 58, (Tij) 11

Stage 13

Waktu Mesin

(1)54 (2)57 (3)64 (4)58 (5)55 (6)60

(St) 1 5 6, (Cj) 64, (Tij) 9
 (St) 2 5 4, (Cj) 58, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 6 5, (Cj) 58, (Tij) 11

Stage 14

Waktu Mesin

(1)54 (2)57 (3)64 (4)64 (5)69 (6)60

(St) 1 5 6, (Cj) 64, (Tij) 9
 (St) 2 6 6, (Cj) 64, (Tij) 12
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5

Stage 15

Waktu Mesin

(1)71 (2)57 (3)64 (4)64 (5)69 (6)65

(St) 1 5 6, (Cj) 65, (Tij) 9
 (St) 2 6 6, (Cj) 65, (Tij) 12
 (St) 4 6 3, (Cj) 65, (Tij) 5

Stage 16

Waktu Mesin

(1)71 (2)57 (3)70 (4)64 (5)69 (6)74

(St) 1 6 5, (Cj) 74, (Tij) 9
 (St) 2 6 6, (Cj) 74, (Tij) 12

Stage 17

Waktu Mesin

(1)71 (2)57 (3)70 (4)64 (5)83 (6)86

Biaya Earlines = 76

Biaya Tardines = 0

Total Biaya = 76

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (20), akhir (32)

1 2 4 = Awal (38), akhir (51)

1 3 2 = Awal (51), akhir (57)

1 4 3 = Awal (57), akhir (64)

1 5 6 = Awal (65), akhir (74)

1 6 5 = Awal (74), akhir (83)

Job 2

2 1 3 = Awal (0), akhir (14)

2 2 2 = Awal (20), akhir (27)

2 3 5 = Awal (31), akhir (44)

2 4 1 = Awal (44), akhir (54)

2 5 4 = Awal (58), akhir (64)

2 6 6 = Awal (74), akhir (86)

Job 3

3 1 2 = Awal (12), akhir (20)

3 2 5 = Awal (20), akhir (31)

3 3 4 = Awal (31), akhir (38)

3 4 3 = Awal (38), akhir (47)

3 5 6 = Awal (47), akhir (60)

3 6 1 = Awal (60), akhir (71)

Job 4

4 1 1 = Awal (0), akhir (13)

4 2 4 = Awal (13), akhir (27)

4 3 2 = Awal (27), akhir (36)

4 4 5 = Awal (44), akhir (55)

4 5 6 = Awal (60), akhir (65)

4 6 3 = Awal (65), akhir (70)

Job 5

5 1 2 = Awal (0), akhir (12)

5 2 1 = Awal (13), akhir (20)

5 3 3 = Awal (20), akhir (28)

5 4 6 = Awal (28), akhir (43)

5 5 4 = Awal (51), akhir (58)

5 6 5 = Awal (58), akhir (69)

2. Shortest Processing Time

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12

(St) 2 1 3, (Cj) 0, (Tij) 14

(St) 3 1 2, (Cj) 0, (Tij) 8
 (St) 4 1 1, (Cj) 0, (Tij) 13
 (St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)12 (2)8 (3)14 (4)0 (5)0 (6)0

(St) 1 2 4, (Cj) 12, (Tij) 13
 (St) 2 2 2, (Cj) 14, (Tij) 7
 (St) 3 2 5, (Cj) 8, (Tij) 11
 (St) 4 1 1, (Cj) 12, (Tij) 13
 (St) 5 1 2, (Cj) 8, (Tij) 12

Stage 3

Waktu Mesin

(1)12 (2)20 (3)14 (4)0 (5)19 (6)0

(St) 1 2 4, (Cj) 12, (Tij) 13
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 3 4, (Cj) 19, (Tij) 7
 (St) 4 1 1, (Cj) 12, (Tij) 13
 (St) 5 2 1, (Cj) 20, (Tij) 7

Stage 4

Waktu Mesin

(1)25 (2)20 (3)14 (4)25 (5)19 (6)0

(St) 1 3 2, (Cj) 25, (Tij) 6
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 3 4, (Cj) 25, (Tij) 7
 (St) 4 2 4, (Cj) 25, (Tij) 14
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 5

Waktu Mesin

(1)25 (2)27 (3)14 (4)25 (5)19 (6)0

(St) 1 3 2, (Cj) 27, (Tij) 6
 (St) 2 3 5, (Cj) 27, (Tij) 13
 (St) 3 3 4, (Cj) 25, (Tij) 7
 (St) 4 2 4, (Cj) 25, (Tij) 14
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 6

Waktu Mesin

(1)32 (2)27 (3)14 (4)32 (5)19 (6)0

(St) 1 3 2, (Cj) 27, (Tij) 6
 (St) 2 3 5, (Cj) 27, (Tij) 13
 (St) 3 4 3, (Cj) 32, (Tij) 9
 (St) 4 2 4, (Cj) 32, (Tij) 14
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 7

Waktu Mesin

(1)32 (2)33 (3)14 (4)32 (5)40 (6)0

(St) 1 4 3, (Cj) 33, (Tij) 7

(St) 2 4 1, (Cj) 40, (Tij) 10

(St) 3 4 3, (Cj) 32, (Tij) 9

(St) 4 2 4, (Cj) 32, (Tij) 14

(St) 5 3 3, (Cj) 32, (Tij) 8

Stage 8

Waktu Mesin

(1)32 (2)33 (3)40 (4)46 (5)40 (6)0

(St) 1 4 3, (Cj) 40, (Tij) 7

(St) 2 4 1, (Cj) 40, (Tij) 10

(St) 3 4 3, (Cj) 40, (Tij) 9

(St) 4 3 2, (Cj) 46, (Tij) 9

(St) 5 4 6, (Cj) 40, (Tij) 15

Stage 9

Waktu Mesin

(1)50 (2)33 (3)47 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 3 2, (Cj) 46, (Tij) 9

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 10

Waktu Mesin

(1)50 (2)55 (3)47 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 11

Waktu Mesin

(1)50 (2)55 (3)56 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 5 6, (Cj) 56, (Tij) 13

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 12

Waktu Mesin

(1)50 (2)55 (3)56 (4)56 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 6 6, (Cj) 56, (Tij) 12

(St) 3 5 6, (Cj) 56, (Tij) 13

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 56, (Tij) 7

Stage 13

Waktu Mesin

(1)50 (2)55 (3)56 (4)56 (5)66 (6)64

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 2 6 6, (Cj) 64, (Tij) 12

(St) 3 5 6, (Cj) 64, (Tij) 13

(St) 4 5 6, (Cj) 66, (Tij) 5

(St) 5 5 4, (Cj) 56, (Tij) 7

Stage 14

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)66 (6)64

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 2 6 6, (Cj) 64, (Tij) 12

(St) 3 5 6, (Cj) 64, (Tij) 13

(St) 4 5 6, (Cj) 66, (Tij) 5

(St) 5 6 5, (Cj) 66, (Tij) 11

Stage 15

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)66 (6)76

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

(St) 5 6 5, (Cj) 66, (Tij) 11

Stage 16

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)75 (6)76

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

(St) 5 6 5, (Cj) 75, (Tij) 11

Stage 17

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)86 (6)76

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

Stage 18

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)86 (6)81

(St) 3 5 6, (Cj) 81, (Tij) 13

(St) 4 6 3, (Cj) 81, (Tij) 5

Stage 19

Waktu Mesin

(1)50 (2)55 (3)86 (4)63 (5)86 (6)94

(St) 3 6 1, (Cj) 94, (Tij) 11

Stage 20

Waktu Mesin

(1)105 (2)55 (3)86 (4)63 (5)86 (6)94

Biaya Earlines = 35

Biaya Tardines = 16

Total Biaya = 51

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (0), akhir (12)

1 2 4 = Awal (12), akhir (25)

1 3 2 = Awal (27), akhir (33)

1 4 3 = Awal (40), akhir (47)

1 5 6 = Awal (55), akhir (64)

1 6 5 = Awal (66), akhir (75)

Job 2

2 1 3 = Awal (0), akhir (14)

2 2 2 = Awal (20), akhir (27)

2 3 5 = Awal (27), akhir (40)

2 4 1 = Awal (40), akhir (50)

2 5 4 = Awal (50), akhir (56)

2 6 6 = Awal (64), akhir (76)

Job 3

3 1 2 = Awal (0), akhir (8)

3 2 5 = Awal (8), akhir (19)

3 3 4 = Awal (25), akhir (32)

3 4 3 = Awal (47), akhir (56)

3 5 6 = Awal (81), akhir (94)

3 6 1 = Awal (94), akhir (105)

Job 4

4 1 1 = Awal (12), akhir (25)

4 2 4 = Awal (32), akhir (46)

4 3 2 = Awal (46), akhir (55)

4 4 5 = Awal (55), akhir (66)

4 5 6 = Awal (76), akhir (81)

4 6 3 = Awal (81), akhir (86)

Job 5

5 1 2 = Awal (8), akhir (20)

5 2 1 = Awal (25), akhir (32)

5 3 3 = Awal (32), akhir (40)
 5 4 6 = Awal (40), akhir (55)
 5 5 4 = Awal (56), akhir (63)
 5 6 5 = Awal (75), akhir (86)

3. S / O P N

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12
 (St) 2 1 3, (Cj) 0, (Tij) 14
 (St) 3 1 2, (Cj) 0, (Tij) 8
 (St) 4 1 1, (Cj) 0, (Tij) 13
 (St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)13 (2)12 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12
 (St) 2 2 2, (Cj) 14, (Tij) 7
 (St) 3 1 2, (Cj) 12, (Tij) 8
 (St) 4 2 4, (Cj) 13, (Tij) 14
 (St) 5 2 1, (Cj) 13, (Tij) 7

Stage 3

Waktu Mesin

(1)13 (2)20 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 2 5, (Cj) 20, (Tij) 11
 (St) 4 2 4, (Cj) 13, (Tij) 14
 (St) 5 2 1, (Cj) 13, (Tij) 7

Stage 4

Waktu Mesin

(1)25 (2)20 (3)14 (4)27 (5)0 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 2 5, (Cj) 20, (Tij) 11
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 5

Waktu Mesin

(1)25 (2)27 (3)14 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 6

Waktu Mesin

(1)32 (2)27 (3)14 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 3 5, (Cj) 31, (Tij) 13
 (St) 3 3 4, (Cj) 31, (Tij) 7
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 7

Waktu Mesin

(1)32 (2)36 (3)14 (4)40 (5)31 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 3 5, (Cj) 31, (Tij) 13
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 36, (Tij) 11
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 8

Waktu Mesin

(1)32 (2)36 (3)14 (4)40 (5)44 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 9

Waktu Mesin

(1)32 (2)36 (3)40 (4)40 (5)44 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 4 6, (Cj) 40, (Tij) 15

Stage 10

Waktu Mesin

(1)32 (2)46 (3)40 (4)47 (5)44 (6)55

(St) 1 4 3, (Cj) 46, (Tij) 7
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 4 3, (Cj) 47, (Tij) 9
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 5 4, (Cj) 55, (Tij) 7

Stage 11

Waktu Mesin

(1)54 (2)46 (3)40 (4)47 (5)55 (6)55

(St) 1 4 3, (Cj) 46, (Tij) 7

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 12

Waktu Mesin

(1)54 (2)46 (3)53 (4)47 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 4 3, (Cj) 53, (Tij) 9

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 13

Waktu Mesin

(1)54 (2)46 (3)62 (4)47 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 5 6, (Cj) 62, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 14

Waktu Mesin

(1)54 (2)46 (3)62 (4)60 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 6 6, (Cj) 60, (Tij) 12

(St) 3 5 6, (Cj) 62, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 60, (Tij) 7

Stage 15

Waktu Mesin

(1)54 (2)46 (3)62 (4)60 (5)55 (6)60

(St) 1 5 6, (Cj) 60, (Tij) 9

(St) 2 6 6, (Cj) 60, (Tij) 12

(St) 3 5 6, (Cj) 62, (Tij) 13

(St) 4 6 3, (Cj) 62, (Tij) 5

(St) 5 5 4, (Cj) 60, (Tij) 7

Stage 16

Waktu Mesin

(1)54 (2)46 (3)62 (4)67 (5)55 (6)69

(St) 1 6 5, (Cj) 69, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13
 (St) 4 6 3, (Cj) 62, (Tij) 5
 (St) 5 6 5, (Cj) 67, (Tij) 11

Stage 17

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)55 (6)69

(St) 1 6 5, (Cj) 69, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13
 (St) 5 6 5, (Cj) 67, (Tij) 11

Stage 18

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)78 (6)69

(St) 1 6 5, (Cj) 78, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13

Stage 19

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)78 (6)82

(St) 1 6 5, (Cj) 78, (Tij) 9
 (St) 2 6 6, (Cj) 82, (Tij) 12
 (St) 3 6 1, (Cj) 82, (Tij) 11

Stage 20

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)87 (6)82

(St) 2 6 6, (Cj) 82, (Tij) 12
 (St) 3 6 1, (Cj) 82, (Tij) 11

Stage 21

Waktu Mesin

(1)93 (2)46 (3)67 (4)67 (5)87 (6)94

Biaya Earlines = 36

Biaya Tardines = 0

Total Biaya = 36

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (13), akhir (25)
 1 2 4 = Awal (27), akhir (40)
 1 3 2 = Awal (40), akhir (46)
 1 4 3 = Awal (46), akhir (53)
 1 5 6 = Awal (60), akhir (69)
 1 6 5 = Awal (78), akhir (87)

Job 2

2 1 3 = Awal (0), akhir (14)
 2 2 2 = Awal (20), akhir (27)
 2 3 5 = Awal (31), akhir (44)
 2 4 1 = Awal (44), akhir (54)
 2 5 4 = Awal (54), akhir (60)
 2 6 6 = Awal (82), akhir (94)

Job 3

3 1 2 = Awal (12), akhir (20)
 3 2 5 = Awal (20), akhir (31)
 3 3 4 = Awal (40), akhir (47)
 3 4 3 = Awal (53), akhir (62)
 3 5 6 = Awal (69), akhir (82)
 3 6 1 = Awal (82), akhir (93)

Job 4

4 1 1 = Awal (0), akhir (13)
 4 2 4 = Awal (13), akhir (27)
 4 3 2 = Awal (27), akhir (36)
 4 4 5 = Awal (44), akhir (55)
 4 5 6 = Awal (55), akhir (60)
 4 6 3 = Awal (62), akhir (67)

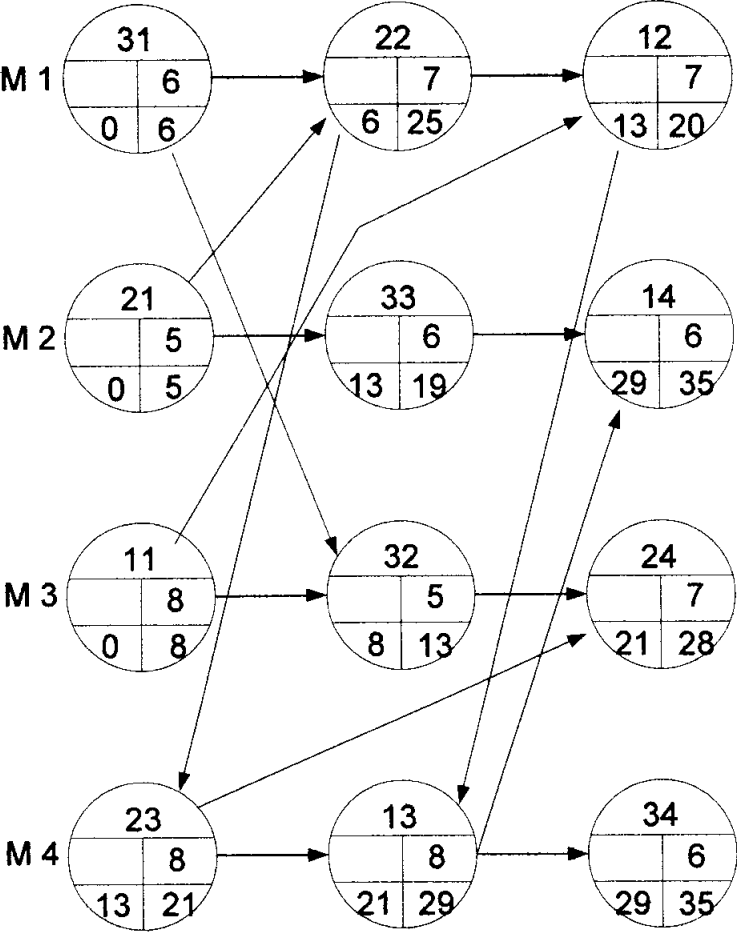
Job 5

5 1 2 = Awal (0), akhir (12)
 5 2 1 = Awal (25), akhir (32)
 5 3 3 = Awal (32), akhir (40)
 5 4 6 = Awal (40), akhir (55)
 5 5 4 = Awal (60), akhir (67)
 5 6 5 = Awal (67), akhir (78)

FORWARD INSERTED IDLE TIME (PRIORITY RULES S/OPN)

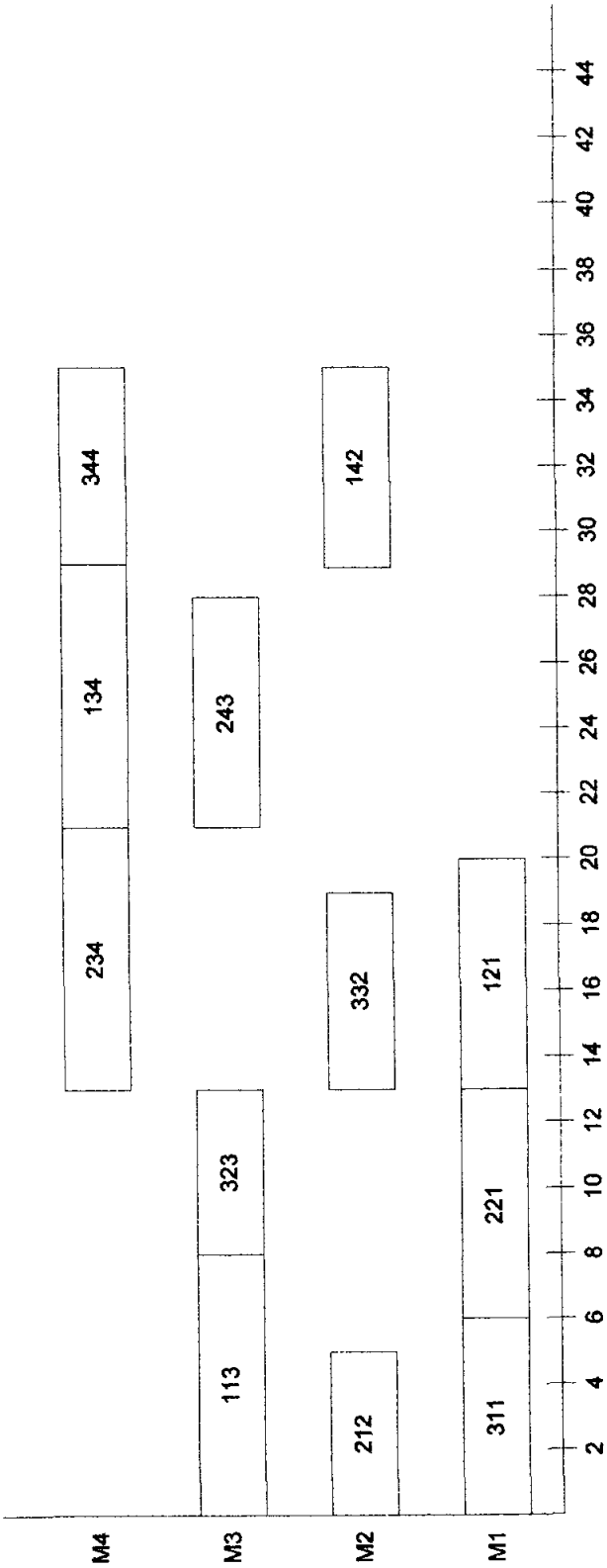
Soal 1

Schedule Graph Non Delay Forward dengan Priority Control S/OPN



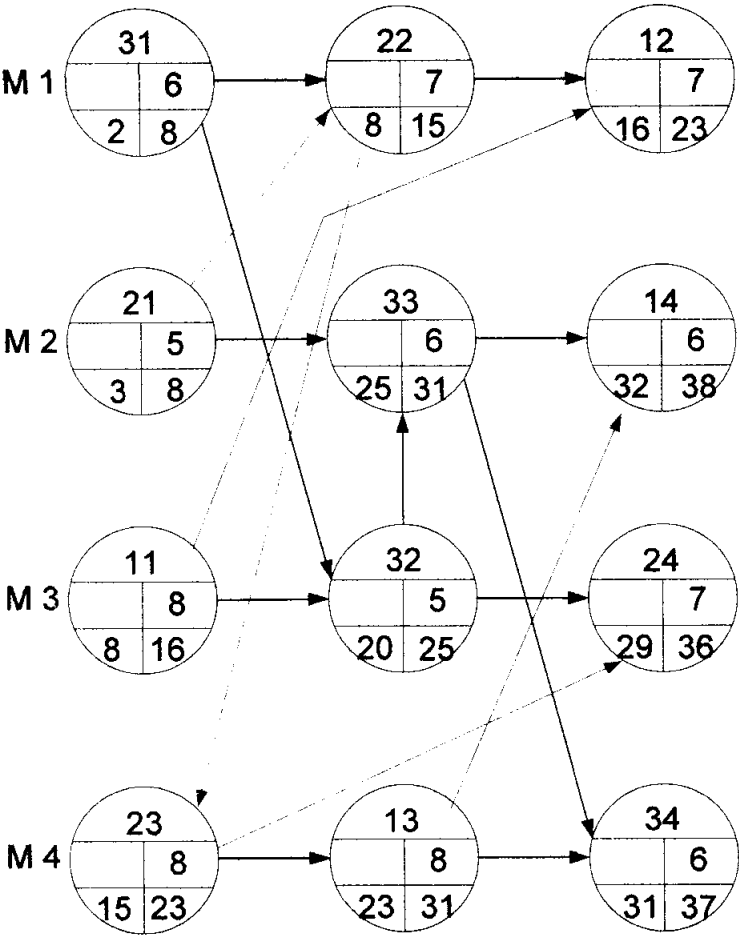
Job 1 Job 2 Job 3

$$= (38 - 35)1 + (36 - 28)1 + (37 - 35)1 = 13$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control S/OPN

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
S/OPN

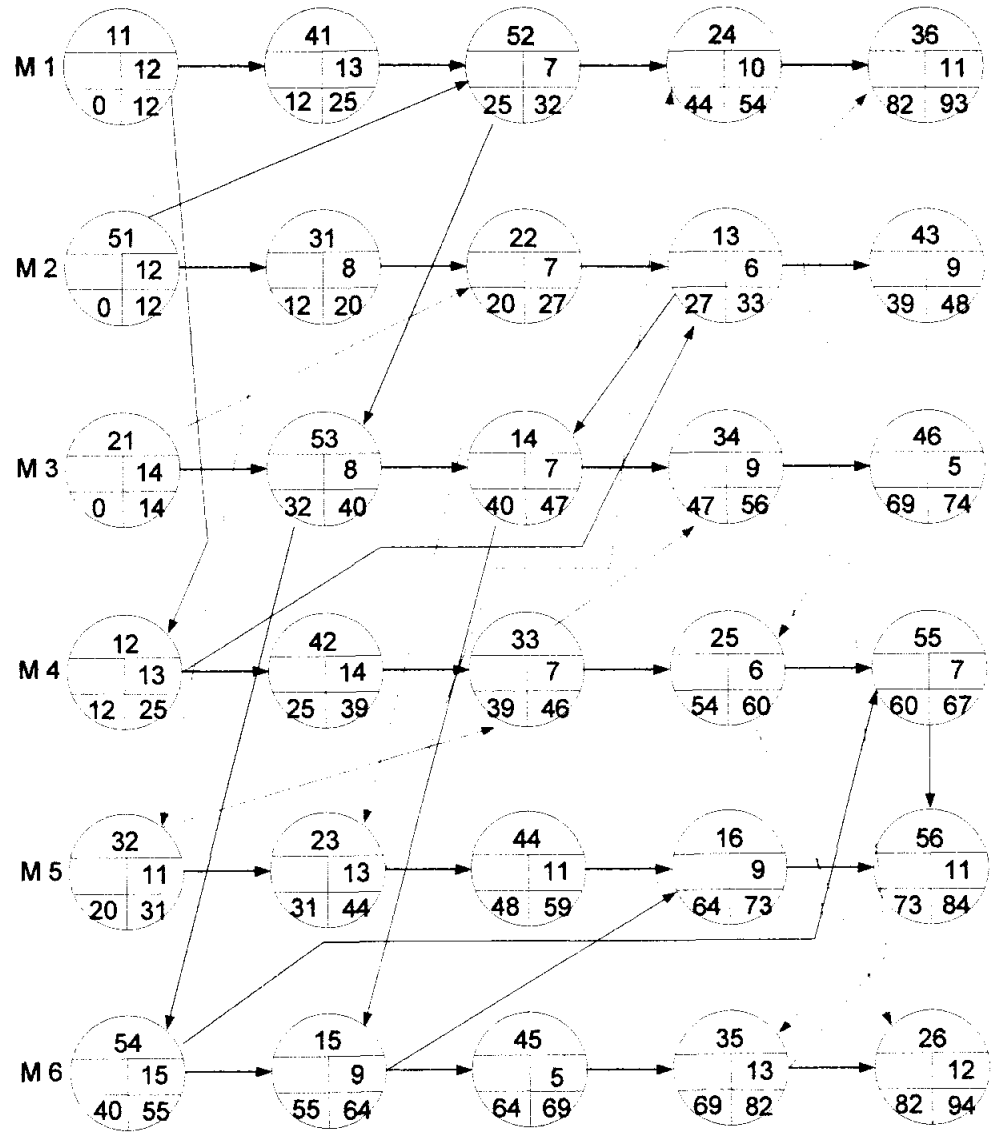


Job 1 Job 2 Job 3

$$= (38 - 38)1 + (36 - 36)1 + (37 - 37)1 = 0$$

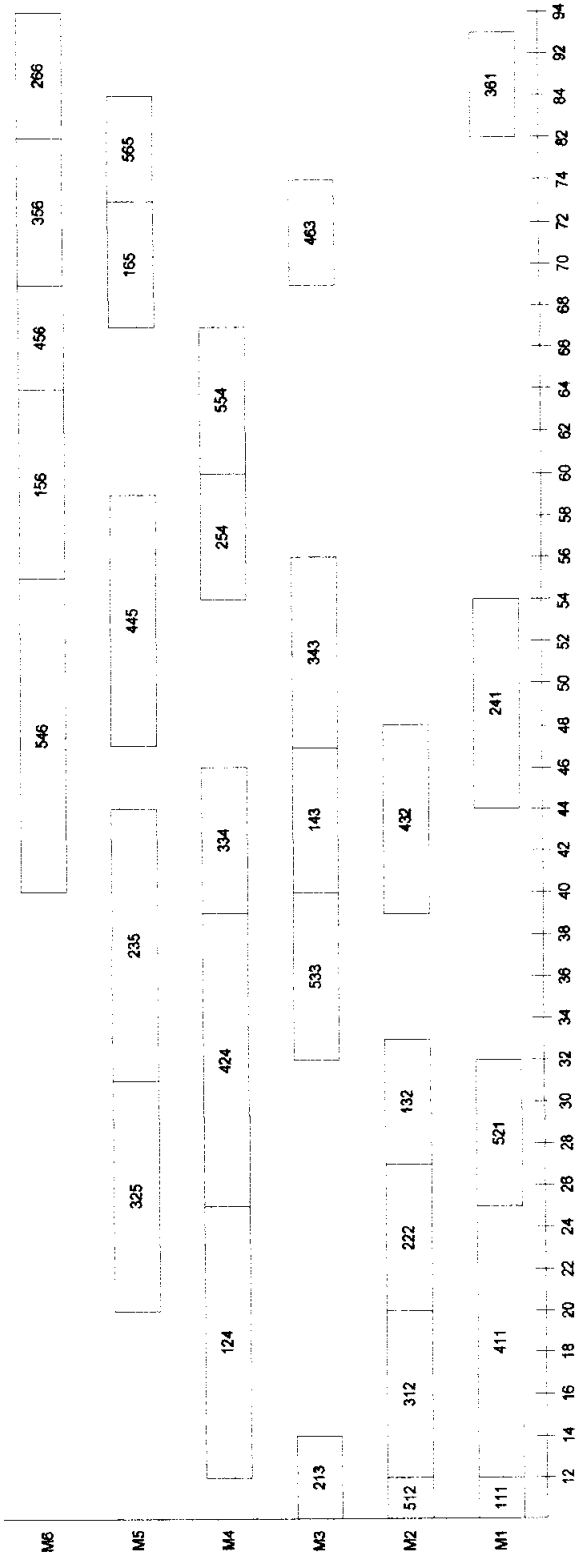
Soal 2

Schedule Graph Non-delay Forward dengan PriorityControl S/OPN



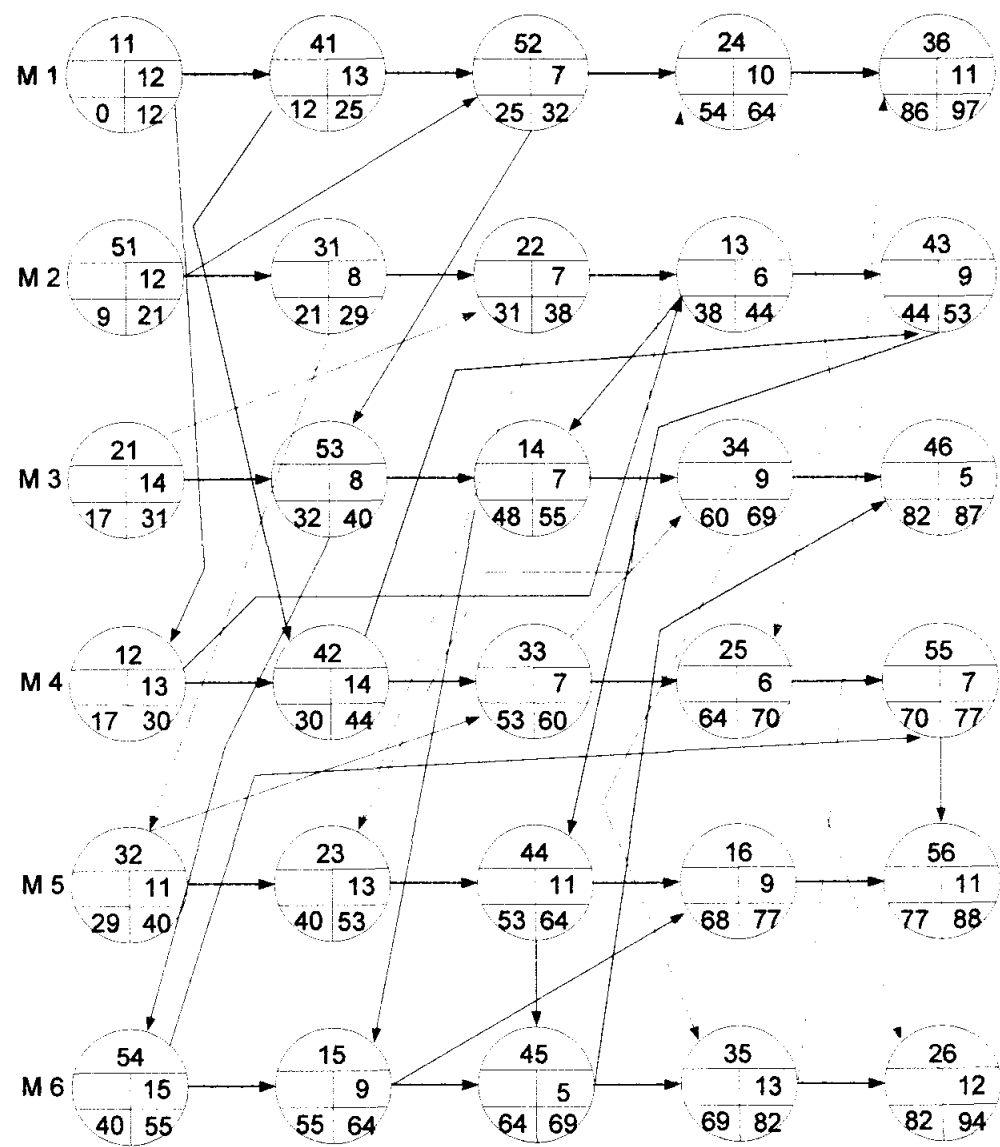
Job 1 Job 2 Job 3 Job 4 Job 5

$$= (89 - 73)1 + (94 - 94)1 + (97 - 93)1 + (87 - 74)1 + (88 - 84)1 = 37$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control S/OPN

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
S/OPN



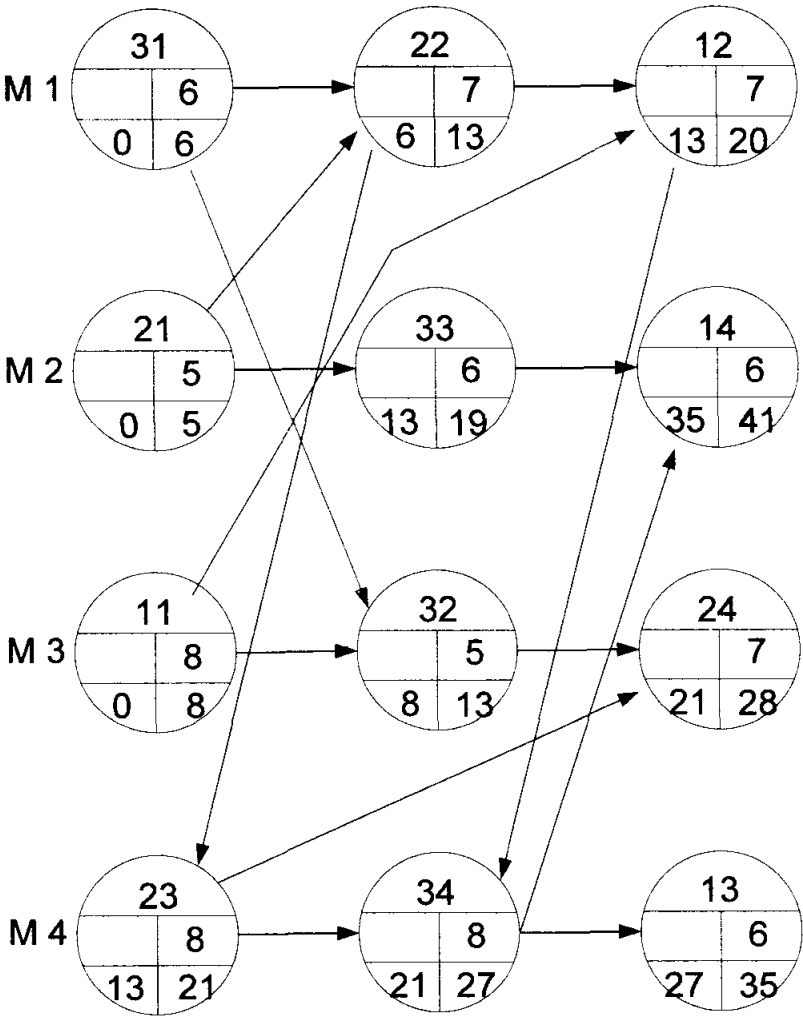
Job 1 Job 2 Job 3 Job 4 Job 5

$$= (89 - 77)1 + (94 - 94)1 + (97 - 97)1 + (87 - 87)1 + (88 - 88)1 = 12$$

FORWARD INSERTED IDLE TIME (PRIORITY RULES EDD)

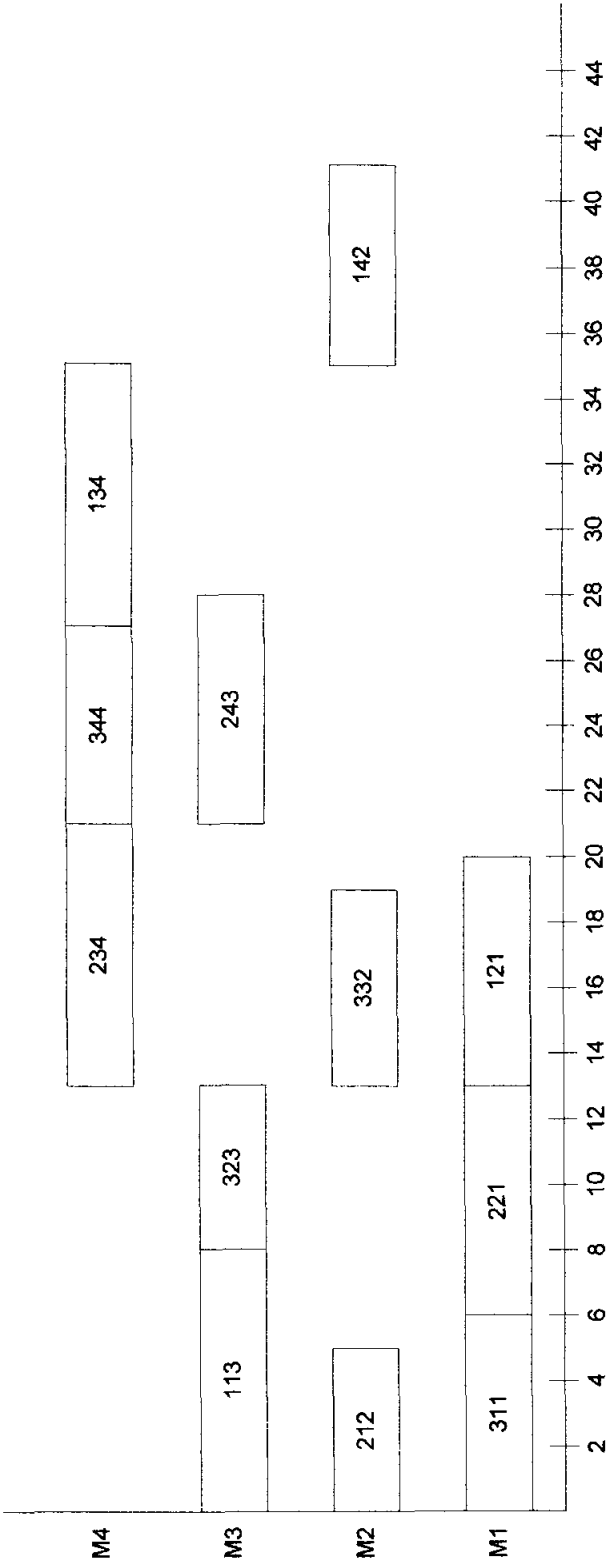
Soal 1

Schedule Graph Non Delay Forward dengan Priority Control EDD



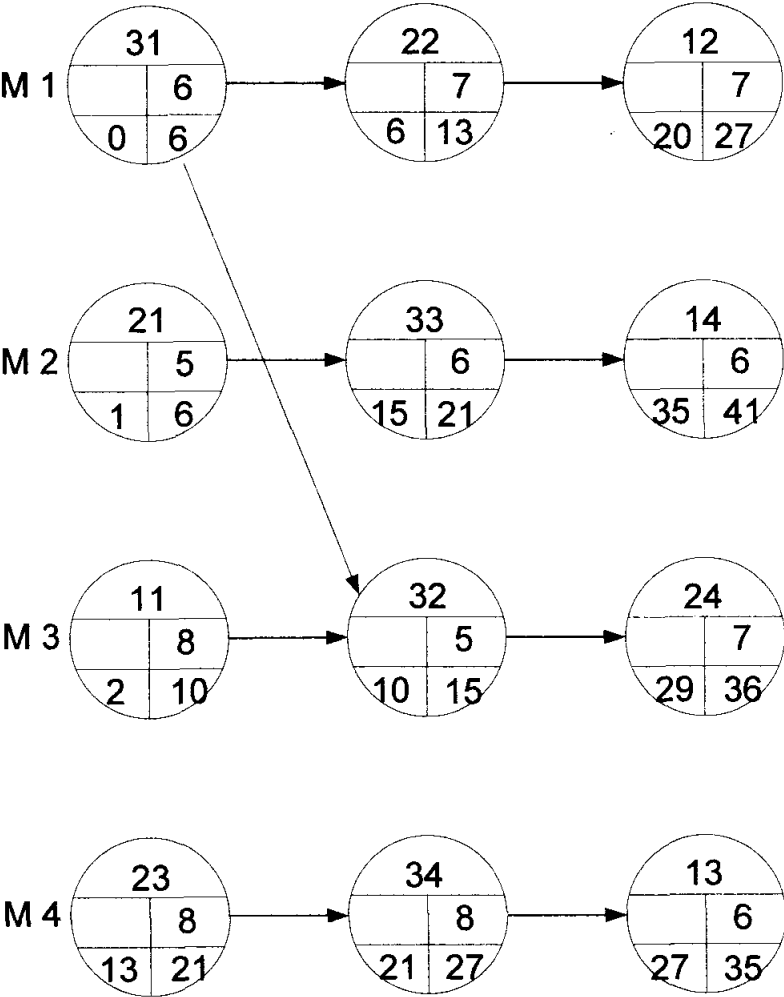
Job 1 Job 2 Job 3

$$= (41 - 38)2 + (36 - 28)1 + (37 - 27)1 = 24$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control EDD

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
EDD

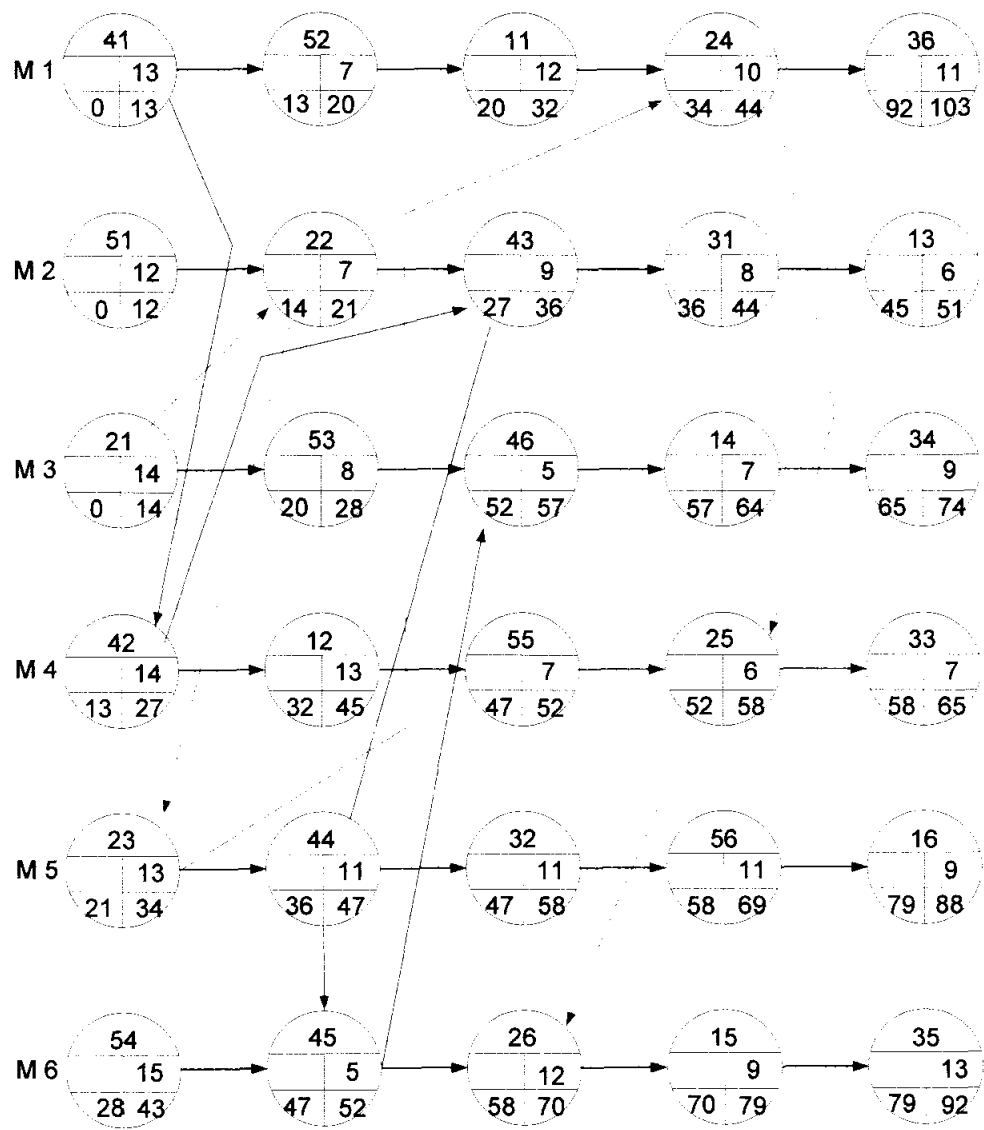


Job 1 Job 2 Job 3

$$= (41 - 38)2 + (36 - 36)1 + (37 - 27)1 = 16$$

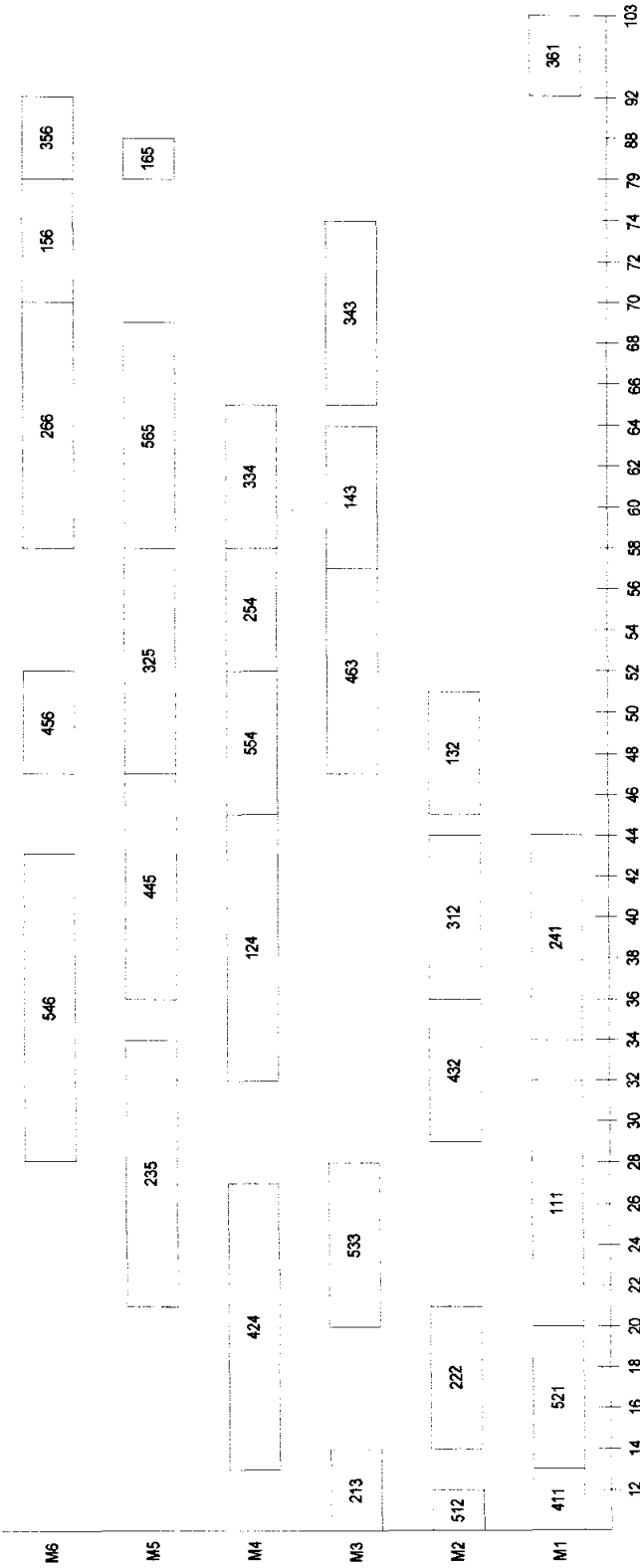
Soal 2

Schedule Graph Non Delay Forward dengan Priority Control EDD



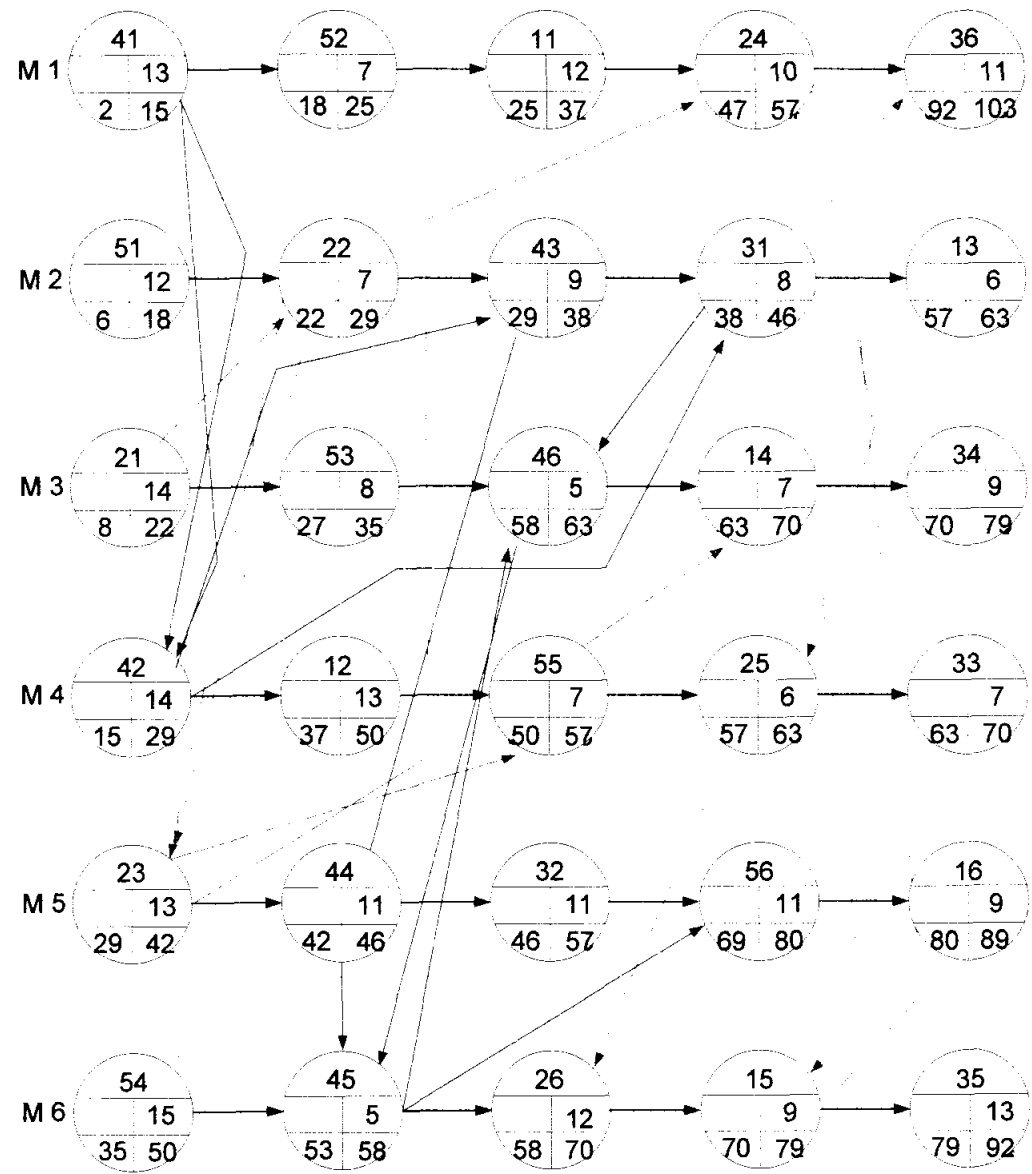
Job 1 Job 2 Job 3 Job 4 Job 5

$$= (89 - 73)1 + (94 - 94)1 + (97 - 93)1 + (87 - 74)1 + (88 - 84)1 = 37$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control EDD

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
EDD



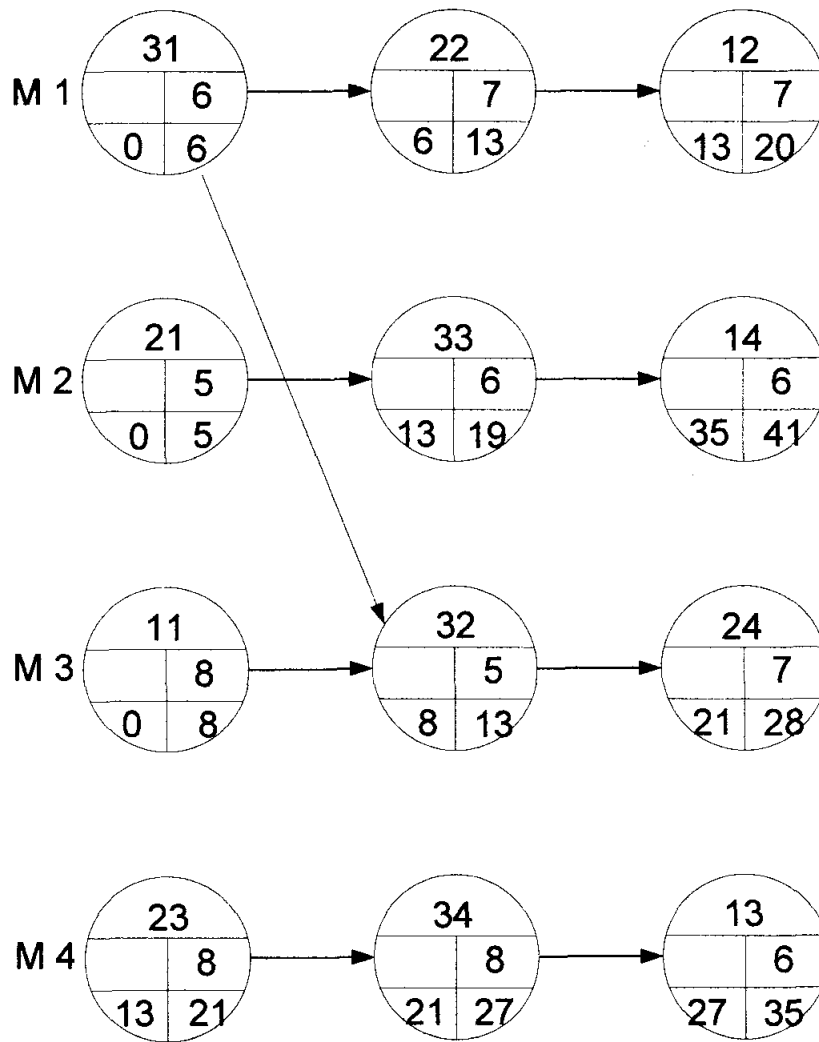
Job 1 Job 2 Job 3 Job 4 Job 5

$$= (89 - 89)1 + (94 - 70)1 + (103 - 97)2 + (87 - 63)1 + (88 - 80)1 = 68$$

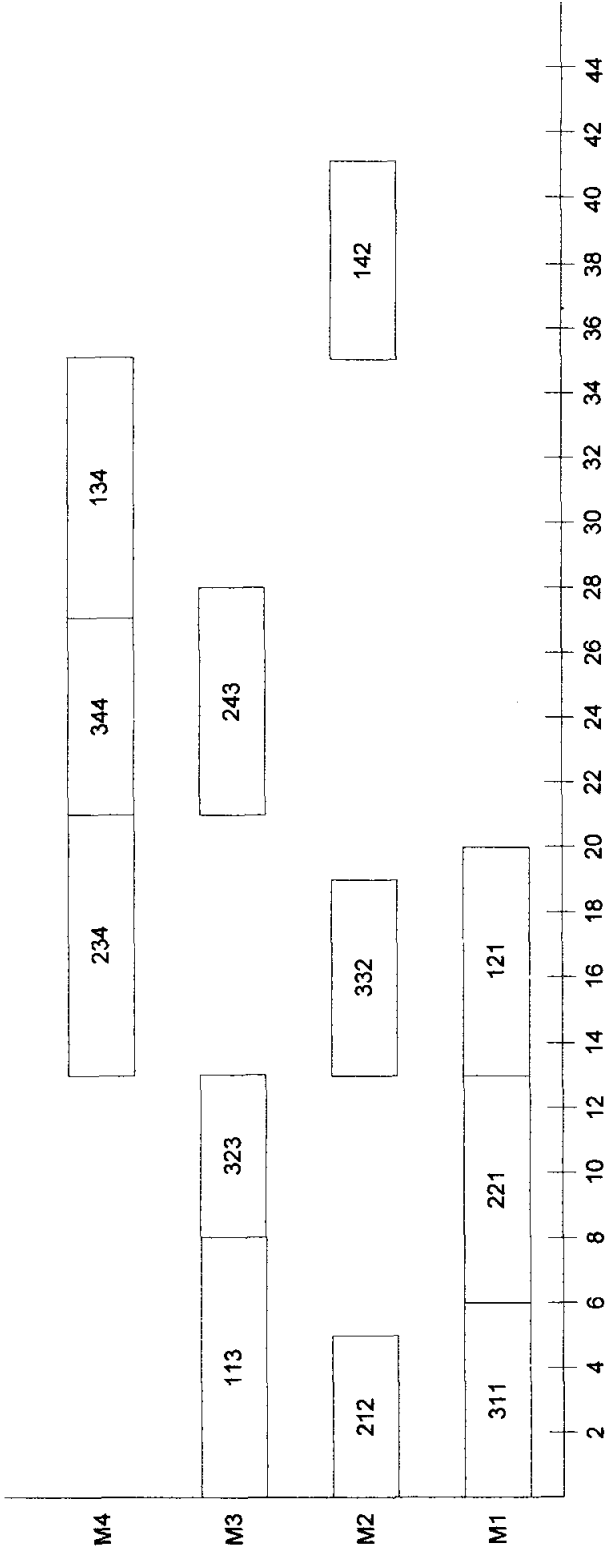
FORWARD INSERTED IDLE TIME (PRIORITY RULES SPT)

Soal 1

Schedule Graph Non Delay Forward dengan Priority Control SPT

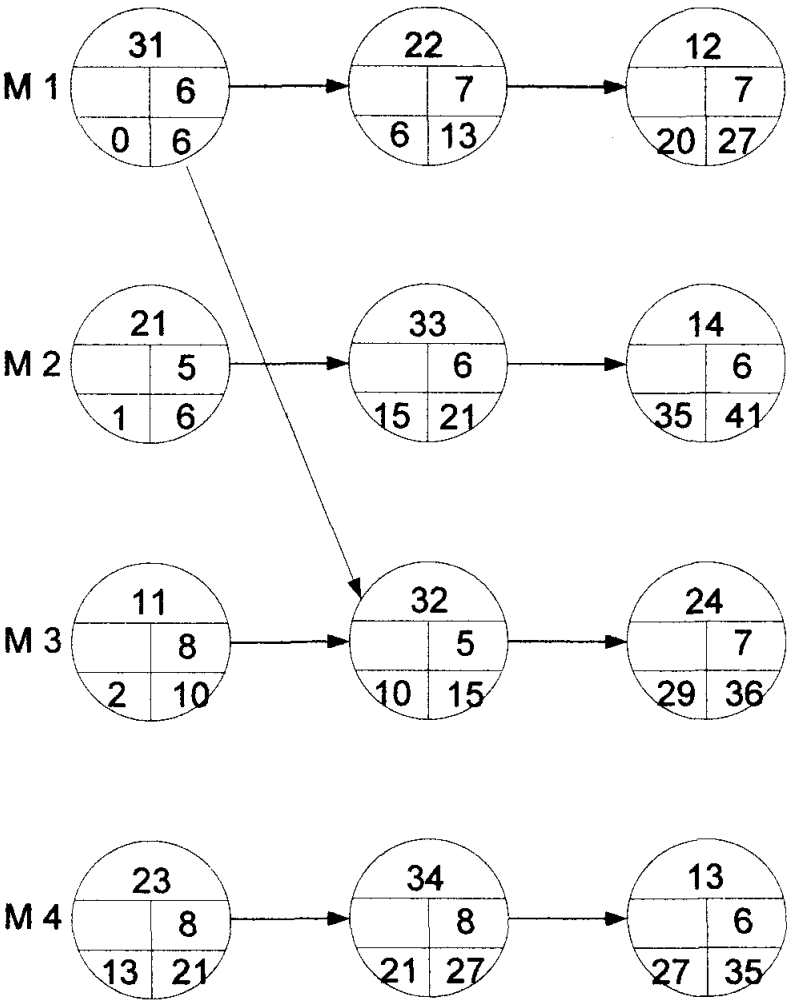


$$\begin{array}{ccc}
 \text{Job 1} & \text{Job 2} & \text{Job 3} \\
 = (41 - 38)2 + (36 - 28)1 + (37 - 27)1 = 24
 \end{array}$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control SPT

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
SPT

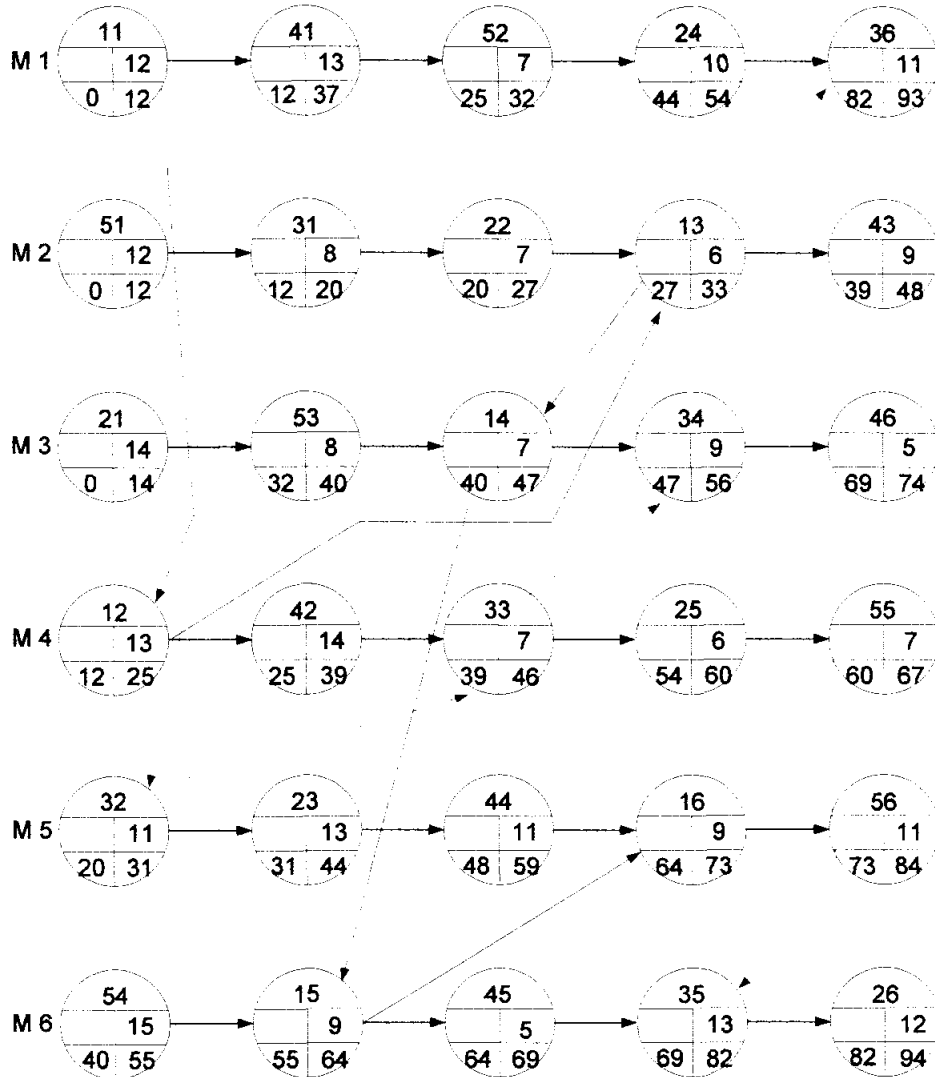


Job 1 Job 2 Job 3

$$= (41 - 38)2 + (36 - 36)1 + (37 - 27)1 = 16$$

Soal 2

Schedule Graph Non Delay Forward dengan Priority Control SPT



Job 1

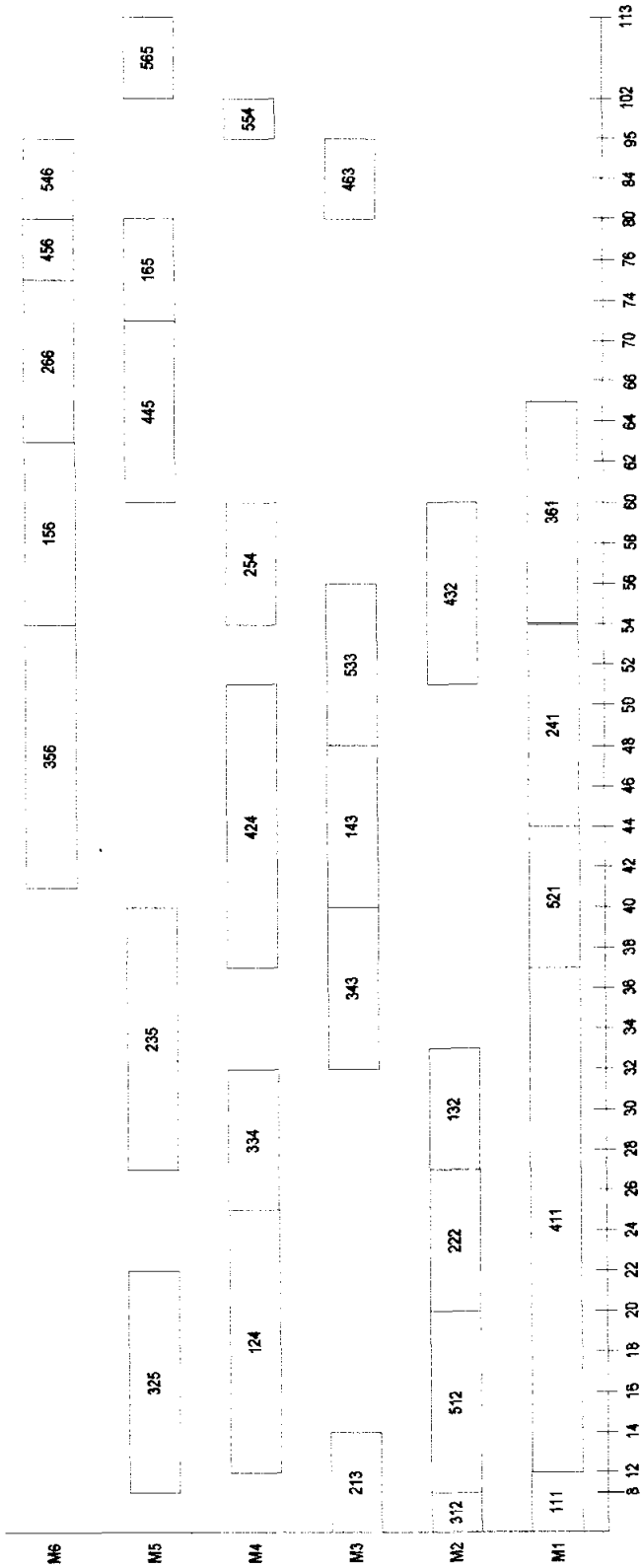
Job 2

Job 3

Job 4

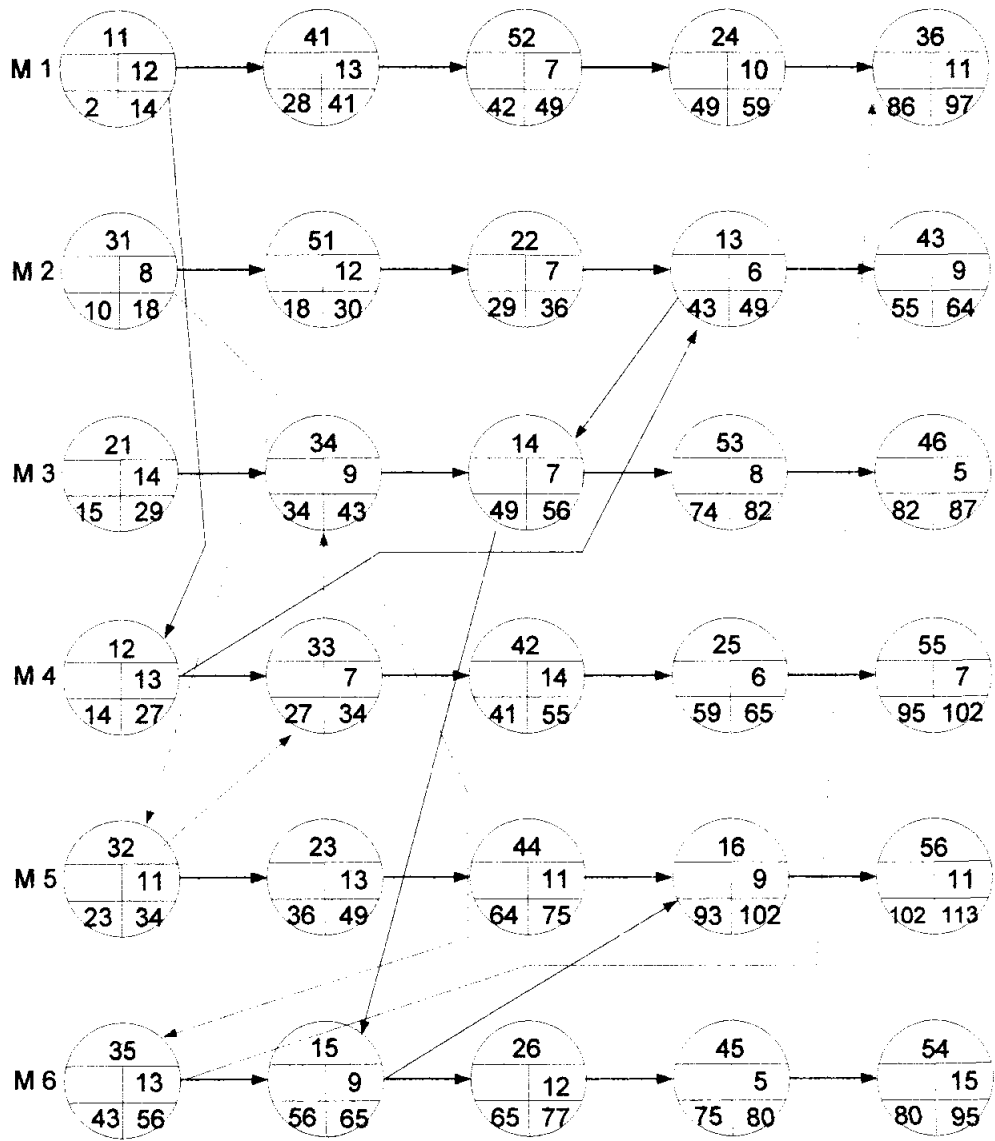
Job 5

$$= (89 - 79)1 + (94 - 75)1 + (197 - 65)2 + (87 - 85)1 + (113 - 88)2 = 113$$



Gantt Chart Penjadwalan Non Delay Forward dengan Priority Control SPT

Schedule Graph Non Delay Forward Inserted Idle Time dengan Priority Control
SPT



Job 1 Job 2 Job 3 Job 4 Job 5

$$= (102 - 89)2 + (94 - 77)1 + (97 - 97)1 + (87 - 87)1 + (113 - 88)2 = 93$$

LAMPIRAN C

Persamaan LINDO :

1. Soal 1

Min $E14 + E24 + E34 + 2T14 + 2T24 + 2T34$

St

$C12 - C11 \geq 7$

$C13 - C12 \geq 8$

$C14 - C13 \geq 6$

$C22 - C21 \geq 7$

$C23 - C22 \geq 8$

$C24 - C23 \geq 7$

$C32 - C31 \geq 5$

$C33 - C32 \geq 6$

$C34 - C33 \geq 5$

$-C12 + C22 + 10000 Z1 \leq 9993$

$-C12 + C22 + 10000 Z1 \geq 7$

$-C12 + C31 + 10000 Z2 \leq 9993$

$-C12 + C31 + 10000 Z2 \geq 6$

$-C22 + C31 + 10000 Z3 \leq 9993$

$-C22 + C31 + 10000 Z3 \geq 6$

$-C14 + C21 + 10000 Z4 \leq 9994$

$-C14 + C21 + 10000 Z4 \geq 5$

$-C14 + C33 + 10000 Z5 \leq 9994$

$-C14 + C33 + 10000 Z5 \geq 6$

$-C21 + C33 + 10000 Z6 \leq 9995$

$-C21 + C33 + 10000 Z6 \geq 6$

$-C11 + C24 + 10000 Z7 \leq 9992$

$-C11 + C24 + 10000 Z7 \geq 7$

$-C11 + C32 + 10000 Z8 \leq 9992$

$-C11 + C32 + 10000 Z8 \geq 5$

$-C24 + C32 + 10000 Z9 \leq 9993$

$-C24 + C32 + 10000 Z9 \geq 5$

$-C13 + C23 + 10000 Z10 \leq 9994$

$-C13 + C23 + 10000 Z10 \geq 8$

$-C13 + C34 + 10000 Z11 \leq 9994$

$-C13 + C34 + 10000 Z11 \geq 5$

$-C23 + C34 + 10000 Z12 \leq 9992$

$-C23 + C34 + 10000 Z12 \geq 5$

$C11 \geq 8$

$C21 \geq 5$

$C31 \geq 6$

$C14 + E14 \geq 38$

C14 – T14 <= 38
C24 + E24 >= 36
C24 – T24 <= 36
C34 + E34 >= 37
C34 – T34 <= 37
End
Int Z1
Int Z2
Int Z3
Int Z4
Int Z5
Int Z6
Int Z7
Int Z8
Int Z9
Int Z10
Int Z11
Int Z12

Hasil LINDO

1) 0.0000000E+00

VARIABLE	VALUE	REDUCED COST
Z1	1.000000	0.000000
Z2	1.000000	0.000000
Z3	1.000000	0.000000
Z4	1.000000	0.000000
Z5	1.000000	0.000000
Z9	1.000000	0.000000
Z10	1.000000	0.000000
C12	24.000000	0.000000
C11	17.000000	0.000000
C13	32.000000	0.000000
C14	38.000000	0.000000
C22	13.000000	0.000000
C21	6.000000	0.000000
C23	26.000000	0.000000
C24	36.000000	0.000000
C32	22.000000	0.000000
C31	6.000000	0.000000
C33	28.000000	0.000000
Z10	1.000000	0.000000
C12	24.000000	0.000000
C11	17.000000	0.000000
C13	32.000000	0.000000
C14	38.000000	0.000000
C22	13.000000	0.000000
C21	6.000000	0.000000

C23	26.000000	0.000000
C24	36.000000	0.000000
C32	22.000000	0.000000
C31	6.000000	0.000000
C33	28.000000	0.000000
C34	37.000000	0.000000

2. Soal 2

Min E16+E26+E36+E46+E56+2T16+2T26+2T36+2T46+2T56

St

C12 - C11 $\geq$ 13

C13 - C12 $\geq$ 6

C14 - C13 $\geq$ 7

C15 - C14 $\geq$ 9

C16 - C15 $\geq$ 9

C22 - C21 $\geq$ 7

C23 - C22 $\geq$ 13

C24 - C23 $\geq$ 10

C25 - C24 $\geq$ 6

C26 - C25 $\geq$ 12

C32 - C31 $\geq$ 11

C33 - C32 $\geq$ 7

C34 - C33 $\geq$ 9

C35 - C34 $\geq$ 13

C36 - C35 $\geq$ 11

C42 - C41 $\geq$ 14

C43 - C42 $\geq$ 9

C44 - C43 $\geq$ 11

C45 - C44 $\geq$ 5

C46 - C45 $\geq$ 5

C52 - C51 $\geq$ 7

C53 - C52 $\geq$ 8

C54 - C53 $\geq$ 15

C55 - C54 $\geq$ 7

C56 - C55 $\geq$ 11

-C11 + C24 + 10000 Z1 $\leq$ 9988

-C11 + C24 + 10000 Z1 $\geq$ 10

-C11 + C36 + 10000 Z2 $\leq$ 9988

-C11 + C36 + 10000 Z2 $\geq$ 11

-C11 + C41 + 10000 Z3 $\leq$ 9988

-C11 + C41 + 10000 Z3 $\geq$ 13

-C11 + C52 + 10000 Z4 $\leq$ 9988

-C11 + C52 + 10000 Z4 $\geq$ 7

-C24 + C36 + 10000 Z5 $\leq$ 9990

-C24 + C36 + 10000 Z5 $\geq$ 11

-C24 + C41 + 10000 Z6 $\leq$ 9990

-C24 + C41 + 10000 Z6 $\geq$ 13

-C24 + C52 + 10000 Z7 $\leq$ 9990

$-C24 + C52 + 10000 Z7 \geq 7$
 $-C36 + C41 + 10000 Z8 \leq 9989$
 $-C36 + C41 + 10000 Z8 \geq 13$
 $-C36 + C52 + 10000 Z9 \leq 9989$
 $-C36 + C52 + 10000 Z9 \geq 7$
 $-C41 + C52 + 10000 Z10 \leq 9987$
 $-C41 + C52 + 10000 Z10 \geq 7$
 $-C13 + C22 + 10000 Z11 \leq 9994$
 $-C13 + C22 + 10000 Z11 \geq 7$
 $-C13 + C31 + 10000 Z12 \leq 9994$
 $-C13 + C31 + 10000 Z12 \geq 8$
 $-C13 + C43 + 10000 Z13 \leq 9994$
 $-C13 + C43 + 10000 Z13 \geq 9$
 $-C13 + C51 + 10000 Z14 \leq 9994$
 $-C13 + C51 + 10000 Z14 \geq 12$
 $-C22 + C31 + 10000 Z15 \leq 9993$
 $-C22 + C31 + 10000 Z15 \geq 8$
 $-C22 + C43 + 10000 Z16 \leq 9993$
 $-C22 + C43 + 10000 Z16 \geq 9$
 $-C22 + C51 + 10000 Z17 \leq 9993$
 $-C22 + C51 + 10000 Z17 \geq 12$
 $-C31 + C43 + 10000 Z18 \leq 9992$
 $-C31 + C43 + 10000 Z18 \geq 9$
 $-C31 + C51 + 10000 Z19 \leq 9992$
 $-C31 + C51 + 10000 Z19 \geq 12$
 $-C43 + C51 + 10000 Z20 \leq 9991$
 $-C43 + C51 + 10000 Z20 \geq 12$
 $-C14 + C21 + 10000 Z21 \leq 9993$
 $-C14 + C21 + 10000 Z21 \geq 14$
 $-C14 + C34 + 10000 Z22 \leq 9993$
 $-C14 + C34 + 10000 Z22 \geq 9$
 $-C14 + C46 + 10000 Z23 \leq 9993$
 $-C14 + C46 + 10000 Z23 \geq 5$
 $-C14 + C53 + 10000 Z24 \leq 9993$
 $-C14 + C53 + 10000 Z24 \geq 8$
 $-C21 + C34 + 10000 Z25 \leq 9986$
 $-C21 + C34 + 10000 Z25 \geq 9$
 $-C21 + C46 + 10000 Z26 \leq 9986$
 $-C21 + C46 + 10000 Z26 \geq 5$
 $-C21 + C53 + 10000 Z27 \leq 9986$
 $-C21 + C53 + 10000 Z27 \geq 8$
 $-C34 + C46 + 10000 Z28 \leq 9991$
 $-C34 + C46 + 10000 Z28 \geq 5$
 $-C34 + C53 + 10000 Z29 \leq 9991$
 $-C34 + C53 + 10000 Z29 \geq 8$
 $-C46 + C53 + 10000 Z30 \leq 9995$
 $-C46 + C53 + 10000 Z30 \geq 8$
 $-C12 + C25 + 10000 Z31 \leq 9987$
 $-C12 + C25 + 10000 Z31 \geq 6$

$-C12 + C33 + 10000 Z32 \leq 9987$
 $-C12 + C33 + 10000 Z32 \geq 7$
 $-C12 + C42 + 10000 Z33 \leq 9987$
 $-C12 + C42 + 10000 Z33 \geq 14$
 $-C12 + C55 + 10000 Z34 \leq 9987$
 $-C12 + C55 + 10000 Z34 \geq 7$
 $-C25 + C33 + 10000 Z35 \leq 9994$
 $-C25 + C33 + 10000 Z35 \geq 7$
 $-C25 + C42 + 10000 Z36 \leq 9994$
 $-C25 + C42 + 10000 Z36 \geq 14$
 $-C25 + C55 + 10000 Z37 \leq 9994$
 $-C25 + C55 + 10000 Z37 \geq 7$
 $-C33 + C42 + 10000 Z38 \leq 9993$
 $-C33 + C42 + 10000 Z38 \geq 14$
 $-C33 + C55 + 10000 Z39 \leq 9993$
 $-C33 + C55 + 10000 Z39 \geq 7$
 $-C42 + C55 + 10000 Z40 \leq 9986$
 $-C42 + C55 + 10000 Z40 \geq 7$
 $-C16 + C23 + 10000 Z41 \leq 9991$
 $-C16 + C23 + 10000 Z41 \geq 13$
 $-C16 + C32 + 10000 Z42 \leq 9991$
 $-C16 + C32 + 10000 Z42 \geq 11$
 $-C16 + C44 + 10000 Z43 \leq 9991$
 $-C16 + C44 + 10000 Z43 \geq 11$
 $-C16 + C56 + 10000 Z44 \leq 9991$
 $-C16 + C56 + 10000 Z44 \geq 11$
 $-C23 + C32 + 10000 Z45 \leq 9987$
 $-C23 + C32 + 10000 Z45 \geq 11$
 $-C23 + C44 + 10000 Z46 \leq 9987$
 $-C23 + C44 + 10000 Z46 \geq 11$
 $-C23 + C56 + 10000 Z47 \leq 9987$
 $-C23 + C56 + 10000 Z47 \geq 11$
 $-C32 + C44 + 10000 Z48 \leq 9989$
 $-C32 + C44 + 10000 Z48 \geq 11$
 $-C32 + C56 + 10000 Z49 \leq 9989$
 $-C32 + C56 + 10000 Z49 \geq 11$
 $-C44 + C56 + 10000 Z50 \leq 9989$
 $-C44 + C56 + 10000 Z50 \geq 11$
 $-C15 + C26 + 10000 Z51 \leq 9991$
 $-C15 + C26 + 10000 Z51 \geq 12$
 $-C15 + C35 + 10000 Z52 \leq 9991$
 $-C15 + C35 + 10000 Z52 \geq 13$
 $-C15 + C45 + 10000 Z53 \leq 9991$
 $-C15 + C45 + 10000 Z53 \geq 5$
 $-C15 + C54 + 10000 Z54 \leq 9991$
 $-C15 + C54 + 10000 Z54 \geq 15$
 $-C26 + C35 + 10000 Z55 \leq 9988$
 $-C26 + C35 + 10000 Z55 \geq 13$
 $-C26 + C45 + 10000 Z56 \leq 9988$

-C26 + C45 + 10000 Z56 >= 5
-C26 + C54 + 10000 Z57 <= 9988
-C26 + C54 + 10000 Z57 >= 15
-C35 + C45 + 10000 Z58 <= 9987
-C35 + C45 + 10000 Z58 >= 5
-C35 + C54 + 10000 Z59 <= 9987
-C35 + C54 + 10000 Z59 >= 15
-C45 + C54 + 10000 Z60 <= 9995
-C45 + C54 + 10000 Z60 >= 15
C11 >= 12
C21 >= 14
C31 >= 8
C41 >= 13
C51 >= 12
C16 + E15 >= 89
C16 - T16 <= 89
C26 + E26 >= 94
C26 - T26 <= 94
C36 + E36 >= 97
C36 - T36 <= 97
C46 + E46 >= 87
C46 - T46 <= 87
C56 + E56 >= 88
C56 - T56 <= 88
End
Int Z1
Int Z2
Int Z3
Int Z4
Int Z5
Int Z6
Int Z7
Int Z8
Int Z9
Int Z10
Int Z11
Int Z12
Int Z13
Int Z14
Int Z15
Int Z16
Int Z17
Int Z18
Int Z19
Int Z20
Int Z21
Int Z22
Int Z23
Int Z24

Int Z25
 Int Z26
 Int Z27
 Int Z28
 Int Z29
 Int Z30
 Int Z31
 Int Z32
 Int Z33
 Int Z34
 Int Z35
 Int Z36
 Int Z37
 Int Z38
 Int Z39
 Int Z40
 Int Z41
 Int Z42
 Int Z43
 Int Z44
 Int Z45
 Int Z46
 Int Z47
 Int Z48
 Int Z49
 Int Z50
 Int Z51
 Int Z52
 Int Z53
 Int Z54
 Int Z55
 Int Z56
 Int Z57
 Int Z58
 Int Z59
 Int Z60

Hasil LINDO

1) 8.000000

VARIABLE	VALUE	REDUCED COST
Z6	1.000000	0.000000
Z7	1.000000	0.000000
Z8	1.000000	0.000000
Z9	1.000000	0.000000
Z11	1.000000	0.000000
Z12	1.000000	40000.000000
Z14	1.000000	0.000000
Z17	1.000000	0.000000

Z19	1.000000	0.000000
Z20	1.000000	0.000000
Z21	1.000000	0.000000
Z29	1.000000	0.000000
Z30	1.000000	0.000000
Z35	1.000000	0.000000
Z36	1.000000	0.000000
Z37	1.000000	0.000000
Z38	1.000000	0.000000
Z41	1.000000	0.000000
Z42	1.000000	0.000000
Z55	1.000000	0.000000
Z56	1.000000	20000.000000
Z57	1.000000	0.000000
Z59	1.000000	40000.000000
Z60	1.000000	0.000000
T26	2.000000	0.000000
T46	2.000000	0.000000
C12	29.000000	0.000000
C11	12.000000	0.000000
C13	35.000000	0.000000
C14	42.000000	0.000000
C15	51.000000	0.000000
C16	66.000000	0.000000
C22	21.000000	0.000000
C21	14.000000	0.000000
C23	34.000000	0.000000
C24	73.000000	0.000000
C25	79.000000	0.000000
C26	96.000000	0.000000
C32	50.000000	0.000000
C31	29.000000	0.000000
C33	57.000000	0.000000
C34	66.000000	0.000000
C35	79.000000	0.000000
C36	97.000000	0.000000
C42	43.000000	0.000000
C41	29.000000	0.000000
C43	52.000000	0.000000
C44	77.000000	0.000000
C45	84.000000	0.000000
C46	89.000000	0.000000
C52	43.000000	0.000000
C51	14.000000	0.000000
C53	51.000000	0.000000
C54	66.000000	0.000000
C55	73.000000	0.000000
C56	88.000000	0.000000
E15	23.000000	0.000000