SOLUTION:

By using Weighted Average method,

$$R_A(x) = \frac{(a_1 + 2a_2 + 3a_3 + 4a_4 + 5a_5 + 4a_6 + 3a_7 + 2a_8 + a_9)}{25}$$

We have converted fuzzy values into crisp values

$R_{11}(-2, -1, 0, 1, 4, 5, 6, 7, 8) = 3.2$

$R_{12}(-3, -2, -1, 0, 1, 2, 3, 4, 5) = 1$

$R_{13}(7, 8, 10, 11, 14, 15, 17, 18, 19) = 13.32$

$R_{21}(1, 2, 3, 4, 5, 6, 7, 9, 10, 11) = 5.48$

$R_{22}(-3, -2, -1, 0, 4, 5, 6, 7, 8) = 2.8$

$R_{23}(6, 8, 9, 10, 12, 13, 14, 16, 18) = 11.72$

$R_{31}(1, 2, 4, 5, 8, 10, 12, 14, 16) = 7.88$

$R_{32}(-4, -3, 0, 1, 2, 3, 4, 5, 6) = 1.76$

$R_{33}(-1, 0, 1, 2, 4, 5, 6, 7, 8) = 3.6$

$R_{41}(2, 3, 6, 7, 8, 10, 11, 13, 15) = 8.32$

$R_{42}(-2, -1, 0, 1, 2, 3, 4, 5, 6) = 2$

$R_{43}(5, 6, 7, 8, 12, 13, 14, 15, 16) = 10.8$

$R_{51}(3, 5, 6, 8, 10, 12, 13, 15, 17) = 9.88$

$R_{52}(-1, 0, 1, 2, 3, 4, 5, 6, 7) = 3$

$R_{53}(1, 2, 3, 4, 5, 6, 7, 8, 9) = 5.08$

Items	**Cutting M_1**	**Sewing M_2**	**Pressing M_3**
A_1	3.2	1	14.08
A_2	5.48	2.8	11.72
A_3	7.88	1.76	3.6
A_4	8.32	2	10.8
A_5	9.88	3	5.08

Converting 3 machines into 2 machines,

Items	A_1	A_2	A_3	A_4	A_5
M_1	4.2	8.28	9.64	10.35	12.88
M_2	15.08	14.52	5.36	12.8	8.08

The order of jobs as follows:

A_1	A_2	A_4	A_5	A_3

Time calculation utilizing the job order is as follows:

Jobs	**Cutting M_1**		**Sewing M_2**		**Pressing M_3**	
	In Time	Out Time	In Time	Out Time	In Time	Out Time
A_1	0	3.2	3.2	4.2	4.2	18.28
A_2	3.2	8.68	8.68	11.48	18.28	30
A_4	8.68	17	17	19	30	40.8
A_5	17	26.88	26.88	29.77	40.8	45.88
A_3	34.76	42.64	34.76	36.52	45.88	49.48

Total Elapsed time $= 49.48$

Idle Time for Machine $M_1 = 6.84$

Idle Time for Machine $M_2 = 39.03$

Idle Time for Machine $M_3 = 4.2$

Total Idle Time $= M_1 + M_2 + M_3$

$= 6.84 + 39.03 + 4.2$

Total Idle Time $= 50.07$