Table Solutions:
Questions 1 to 4:
Q1 b

First Month :

	1st week	2nd week	3rd week	4th week
Hours of rest	2	5	2	5
Working hrs.	5	2	5	2
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.100	Rs.20	Rs.100	Rs.20
Total Wage per week	Rs.600	Rs.120	Rs.600	Rs.120

Thus his total wage = (600+120+600+120) = Rs.1440

Q2 c
Let us compile the data for 2nd, 3rd and 4th month.

Second Month :

	5th week	6th week	7th week	8th week
Hours of rest	3	7	3	5
Working hrs.	7	3	7	2
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.140	Rs.30	Rs.140	Rs.30
Total Wage per week	Rs.840	Rs.180	Rs.840	Rs.180

Third Month :

	9th week	10th week	11th week	12th week
Hours of rest	4	6	4	6
Working hrs.	6	4	6	4
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.120	Rs.40	Rs.120	Rs.40
Total Wage per week	Rs.720	Rs.240	Rs.720	Rs.240

Fourth Month :

	13th week	14th week	15th week	16th week
Hours of rest	0	8	0	8
Working hrs.	8	0	8	0
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.160	0	Rs.160	0
Total Wage per week	Rs.960	0	Rs.960	0

Total wage for 1st month = Rs.1440
Total wage for 2nd month = (840+180+840+180) = Rs.2040
Total wage for 3rd month = (720+240+720+240) = Rs.1920
Total wage for 4th month = (960+960) = Rs.1920
Total wage for the 4 months = (1440+2040+1920+1920) = 7320
Hence the average salary = 7320/4 = Rs.1830

Q3 d
Using the above data, we can revise the wage compilation for the third month as given below:

Third Month :

	9th week	10th week	11th week	12th week
Hours of rest	4	6	4	6
Working hrs.	6	4	6	4
Wage per hour or work	Rs.25	Rs.12.5	Rs.25	Rs.12.5
Fine per hour of rest	Rs.5	Rs.5	Rs.5	Rs.5
Total wage per day	Rs.150	Rs.50	Rs.150	Rs.50
Total fine per day	Rs.20	Rs.30	Rs.20	Rs.30
Effective wage per day	Rs.130	Rs.20	Rs.130	Rs.20
Total Wage per week	Rs.780	Rs.120	Rs.780	Rs.120

So now his third month age = (780+120+780+120) = Rs.1800.
Previously he used to earn Rs.1920 in the third month.
Hence change in Bankatlal's salary for the 3rd month = (1920 – 1800) = Rs.120.

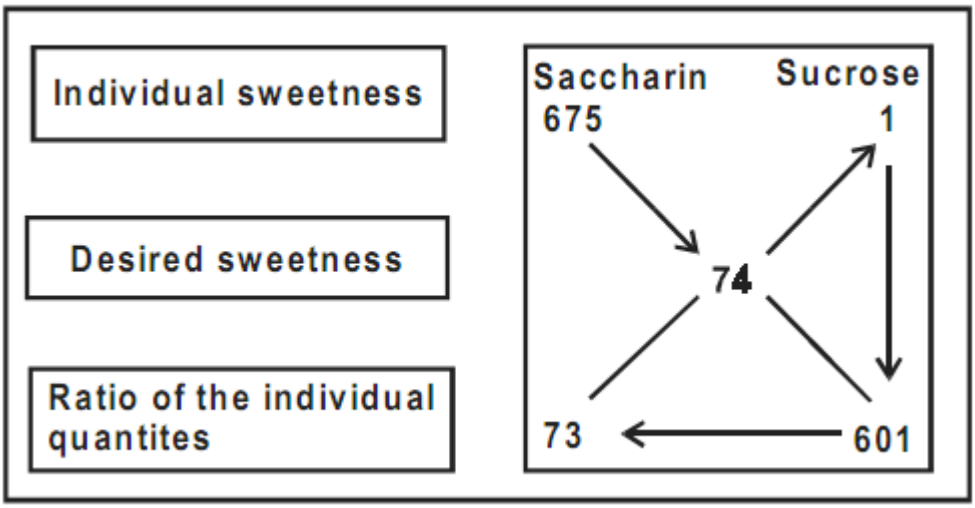
Q4 d
For the fourth month, the new wage compilation will be as given below :

Fourth Month :

	9th week	10th week	11th week	12th week
Hours of rest	0	8	0	8
Working hrs.	8	0	8	0
Wage per hour or work	Rs.25	Rs.12.5	Rs.25	Rs.12.5
Fine per hour of rest	Rs.5	Rs.5	Rs.5	Rs.5
Total wage per day	Rs.400	0	Rs.400	0
Total fine per day	0	Rs.40	0	Rs.40
Effective wage per day	Rs.400	-Rs.40	Rs.400	-Rs.40
Total Wage per week	Rs.2400	-Rs.240	Rs.2400	-Rs.240

So now his total wage for the 4th
month = (2400+2400-240-240) = Rs.4320.
Since the calculations for the first two months are made as per the old scheme of things, this has already been computed.
Total wage for 1st month = Rs.1440
Total wage for 2nd month = Rs.2040
Calculation for the third and fourth month are as per new calculations and they are :
Total wage for 3rd month = Rs.1800
Total wage for 4th month = Rs.4320
So total salary for the four months = (1440+2040+1800+4320) = Rs.9600.

Question 5 and 6 :
Q5 c
If the mixture is to be made 100 times as sweet asglucose, its sweetness should be 74. The ratio in which saccharin and sucrose be mixed to get the above level of sweetness is given by the followingalligation table.



In other words, it means to achieve the given level of sweetness, you need to add 601 g of sucrose to 73 g of saccharin.
Hence to 1 g of saccharin, the amount of sucrose to be added is

$$\frac{601}{73} = 8.23 \text{ g.}$$

Q6 a

$$\frac{[(0.74)+(1.000)2+(1.7)3]}{6} = 1.31.$$

Question 7 to 12

Q7.

The cost of transporting one unit from refinery BD to depot AE is Rs. 0 and the cost of transporting one unit from depot AE to district AAB is also Rs. 0.

∴ The minimum cost of transporting one unit from any refinery to any district is Rs. 0.

Hence, option 1.

Q8 Number of ways = Six refineries × Seven depots × Nine districts

= 6 × 7 × 9

= 378

Hence, option 4.

Q9 The highest cost of transportation from a refinery to the depot = Rs. 1,157.70 (BE to AE)

Cost of transportation from AE to AAF takes up the highest charge of Rs. 1,035.30

∴ The maximum cost = 1157.7 + 1035.3 = Rs. 2,193

Hence, option 2.

Q10 The transportation cost from refinery BD to depot AE is Rs. 0. The transportation cost from depot AE to district AAB is also Rs. 0.

∴ The minimum cost of transportation from BD to any district is Rs. 0.

Hence, option 2.

Q11 The transportation cost from depot AD to district AAG = 0

The transportation cost from refinery BC to depot AD = Rs. 50.1

∴ Minimum cost of transportation from any refinery to district AAG = Rs. 50.1

Hence, option 4.

Q12

The cost will be minimum when the transportation from BE to AAA is through AD.

∴ The cost of transportation = 650.4 + 159 = Rs. 809.4

Hence, option 4.

Questions 13 to16:
Q13.

The movement can be tabulated as below:

Distance	Direction	Speed	Time till next Signal
10	N	20	30 min.
10	W	40	15 min.
20	N	40	30 min.
40	E	100	24 min.
10	N	40	15 min.
Stop			

$$\text{Distance} = 20 \times \frac{1}{2} + 40 \times \frac{1}{4} + 40 \times \frac{1}{2} + 100 \times \frac{2}{5} + 40 \times \frac{1}{4}$$

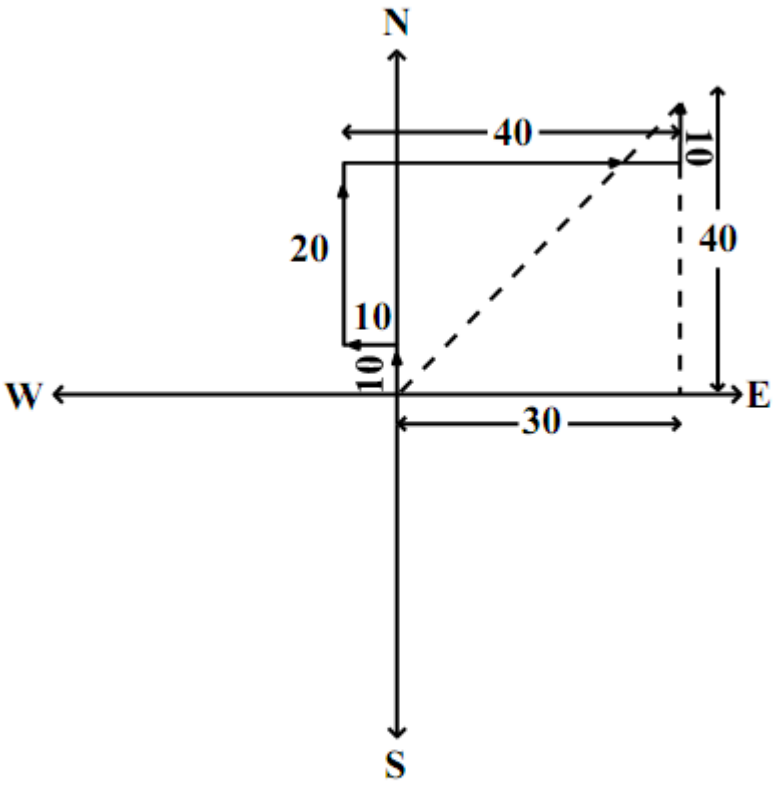
$$= 10 + 10 + 20 + 40 + 10$$

$$= 90 \text{ km}$$

Hence, **option 1**.

Q14

The map of his movements is as shown below:



∴ The net displacement with respect to the starting point.

$= \sqrt{40^2 + 30^2} = 50$ km towards North − East

Hence, **option 2.**

Q15

Since only the direction of the man has changed, the total distance covered by him will still remain the same.

∴ Total distance = 90 km

Hence, option 1.

Q16 If instead of North, the man headed for South, the map given in the solution of the second question in the set will get inverted and flipped.

∴ He will end up south-west of his starting position, instead of north-east.

∴ He ends up at 30 km West and 40 km South of his starting point.

Hence, option 4.

Qustions 17 to 19 :

Q17 Males with their ages = 38, 32, 21, 32, 33

Females with their ages = 34, 35, 27, 37

∴ Minimum number of respondents aged less than 40 =

5 males + 4 females = 9

$$\therefore \text{Required percentage} = \frac{9}{30} \times 100 = 30\%$$

Hence, option 4.

Q18

Maximum number of respondents older than 35 = Total (Minimum number of respondents aged 35 or below

= 30 ((4 males + 3 females)

= 23

$\therefore$ Required percentage $= \frac{23}{30} \times 100 = 76.67\%$

Hence, **option 3**.

Q19

Percentage of respondents in 35-40 years age group is at least = 1 male (38, 38) with no children + 1 female with 1 child + 1 female with 2 children + 1 female with 3 children
= 4

$\therefore$ Required percentage $= \frac{4}{30} \times 100 = 13.33\%$

Hence, **option 3**.

Question 20 to 23 :

Q20. 4 Thailand and Japan (Maximum difference of 4 ranks (5 – 1) = 4)
Q21. 1 China (Maximum difference between 2 parameter is 2)
Q22. 2 Japan (Maximum difference of 4)
Q23. 4 Japan and Malaysia (Inferring from question 20)

Question 24 to 27 :

Comparing Table 1 and 2, university 4 corresponds to UK and university 6 corresponds to USA (after as day 3 values are concerned and university 8 corresponds to India and university 3 to Netherlands now Indian or Netherlands can take university 1 or university 5. Now university 2 and 7 belongs to either UK or Canada (only one).

UNIVERSITY	DAY			COUNTRY
	1	2	3	
University 1	1	0	0	India / Netherlands
University 2	2	0	0	UK / Canada
University 3	0	1	0	Netherlands
University 4	0	0	2	UK
University 5	1	0	0	India/Netherlands
University 6	1	0	1	USA
University 7	2	0	0	UK/Canada
University 8	0	2	0	India

Q24. 1 **Q25.** 3 **Q26**. 1 **Q27**. 2

Questions 28 to 31 :

Q28. Observing the values through the years, we can say that Material, Labour and Operating costs directly vary with the change in volume of production. The other costs are almost constant.
If the production is x units, the variable cost for material, labour and operation is 50x, 20x and 30x respectively.
$\therefore$ Total variable cost = 100x
Total fixed cost (using information for 2006) = 1400 + 1200 + 400 + 800 + 5800 = 9600
$\therefore$ Total cost of producing x units = 100x + 9600

Now, x = 1400 , Cost per unit = (1400 × 100 + 9600)/1400 = 106.85
Hence, option 2.

Q29. From the explanation given in the first question, to avoid any loss, 100x + 9600 $\leqslant$ 125x
$\therefore$ x $\geqslant$ 384
Hence, option 3.

Q30. Profit for 1400 units = 1400 × 125 – (1400 × 100 + 9600) = 25400
Profit for (1400 + m) units = (1400 + m) × 120 - ((1400 + m) × 100 + 9600) = 18400 + 20m
Maximum value of m = 300
Maximum profit for 1400 + 300 units = 24400
∴ Maximum profit that the company can earn is 25400.
Hence, option 1.

Q31. The new reduced price = 0.95 × 125 = 118.75
Profit = 118.75x – 100x – 9600 = 18.75x – 9600
Profit will be maximum when 18.75x is maximum. As the maximum production capacity is 2000 units, profit is maximum when 2000 units are produced.
Hence, option 5.

Questions 32 to35:
Q32. Cost of spinal fusion in India = Rs. 5500 × 40.928
Cost with the increased value of Rupee = 5500 × 40.928/35 = 6431 USD
Cost of Spinal Fusion in Singapore = 9000 USD
Required difference = 9000 – 6431 = 2569 USD
Hence, option 2.

Q33. Cost of Hysterectomy in Thailand = 4500 + 6000 = 10500 USD
Cost of Hysterectomy in India = 3000 + 5000 = 8000 USD
Travelling cost = 15000 Bahts = 15000/32.89 USD = 456 USD
Required difference = 10500 – 8456 = 2044 USD = 2044 × 32.89 = 67227 Bahts
Hence, option 4.

Q34. As shown in the table, Malaysia will have the cheapest package.
Hence, option 3.

	India	Thailand	Singapore	Malaysia	USA
Angioplasty	16000	18000	17000	18000	57000
Hip Replacement	16000	17000	17000	18000	43000
Knee Replacement	17500	16000	17000	12000	40000
Total	49500	51000	51000	48000	140000

Q35. Referring to the table formulated in the first question, India will be the most expensive for knee replacement.
Hence, option 1.

Questions36 to 39
Q36.A mixture of O and S in equal proportion satisfies the given constraints as can be seen from the table.
Hence, option 5.

	Carbohydrate	Protein	Fat	Minerals
O & P	65	25	5	5
R & S	25	50	20	5
P & S	62.5	35	0	2.5
Q & R	7.5	40	45	7.5
O & S	47.5	40	5	7.5

Q37. The diet should contain 10% minerals. P contains no minerals.
∴ P cannot be a part of any mixture.
R and S both contain 5% minerals.
∴ Mix of R and S in any proportion cannot give 10% minerals.
Consider O and R in the proportion x:y
∴ 10x + 5y = 10(x + y)

∴ 5y = 10y, which is not possible.
Similarly, Q and S, O and S, and Q and R are not possible.
Similarly a mix of three ingredients is not possible.
∴ The only possible mix is that of O and Q in equal proportion.
Hence, option 1.

Q38. Consider the options.
Option 1: P and Q have to be mixed in the proportion 4:1 to achieve 10% fat content.
But this does not give 30% protein.
Option 2: P and S do not contain fat.
Option 3: P and R should be mixed in the proportion 3:1 to achieve 10% fat content.
But 30% protein content is not achieved.
Option 4: Q and S should be mixed in the proportion 1:4 to achieve 10% fat content and 46% protein content. The cost of this mix per unit would be 6/5.
Option 5: R and S should be mixed in the proportion 1:3 to achieve 10% fat content and 50% protein content. The cost per unit of this mix would be 2.
Therefore, lowest cost is for Q and S.
Hence, option 4.

Q39.P, Q and S contain 80%, 10% and 45% carbohydrates.
To achieve 60% carbohydrates, proportion of P should be maximum. Hence, options 1 and 3 are eliminated.
Option 2: Carbohydrate content = (320 + 10 + 90)/700 = 420/700 = 60%
Cost per unit = (200 + 200 + 200)/700 = 6/7 = 0.857
Option 4: Carbohydrate content = (240 + 10 + 90)/600 < 60%
Option 5: Carbohydrate content = (320 + 10 + 45)/600 = 62.5%
Cost per unit = (200 + 200 + 100)/600 = 5/6 = 0. 833
P, Q and S in the proportion 4 : 1 : 1 has the lowest cost per unit.
Hence, option 5.