

**Q1 to Q3:**

**Q1 .** Vienna, Sofia, Tripoli, Warsaw and Lusaka lie between  $10^\circ$  E and  $40^\circ$  E.

$\therefore$  The number of cities located within  $10^\circ$  E and  $40^\circ$  E = 5

Out of these, only Lusaka is in the Southern Hemisphere.

$$\therefore \text{Required percentage} = \frac{1}{5} \times 100 = 20\%$$

Hence, **option 2.**

**Q2.**

'Cities' implies that we need to refer to the 'Capitals' column while answering this question.

The number of cities whose names begin with a consonant and are in the Northern Hemisphere = 11

The number of cities whose names begin with a consonant and are in the Southern Hemisphere = 7

The number of cities whose names begin with a consonant and lie East of the meridian = 17

$\therefore$  The number of cities whose names begin with a consonant and are in the Northern Hemisphere exceed the cities whose names begin with a consonant and are in the Southern Hemisphere by 4.

Hence, option 1.

**Q3.** There are three countries, Argentina, Australia and Equador, which start with a vowel and are in the Southern Hemisphere.

There are two countries, Canada and Ghana, whose capitals (Ottawa and Accra) start with a vowel.

$\therefore$  The required ratio = 3 : 2

Hence, option 1.

**Q4 to Q7:**

**Q4.**

$$\text{Earnings per day} = \frac{\text{Total Earnings for complex work}}{\text{Number of days for complex work}}$$

Hence, we have:

Emp. No.	Earnings	Days	Approximation	Pay per day
2001147	82.98	3	< 90/3	< 30
2001148	51.53	3.33	< 60/2	< 30
2001151	171.71	5.5	< 200/5	< 40
2001155	100.47	6	< 120/6	< 20
2001159	594.43	9.67	≈ 600/10	≈ 60
2001161	83.7	8	≈ 80/8	≈ 10
2001162	472.51	1.29	> 400/2	> 200
2001165	402.25	5.27	≈ 400/5	≈ 80
2001167	576.57	21	< 600/20	< 30
2001169	288.48	8.38	≈ 300/9	≈ 33.33
2001170	812.1	10	≈ 800/10	≈ 80
2001171	1203.88	28.8	≈ 1160/29	≈ 40
2001174	1017.94	26	< 1040/26	< 40
2001177	46.56	2	< 50/2	< 25
2001180	116.4	5	< 150/5	< 30

Employees numbered 2001159, 2001162, 2001165 and 2001170 have earned more than Rs. 50 per day in complex operation.

∴ Number of employees = 4

Hence, option 1.

**Q5.** 80% of 25 = 20

∴ Total attendance should be more than 20 and total earning should be more than 600.

There are 7 employees (2001147, 2001159, 2001170, 2001171, 2001174, 2001177 and 2001180) who have worked for more than 20 days and whose earning is more than Rs. 600.

Hence, option 4.

**Q6.** Earnings per day in medium operations for the given options is as follows:

$$\text{Employee 2001180} \equiv \frac{1262.79}{19} = \text{Rs. } 66.5$$

$$\text{Employee 2001165} \equiv \frac{735.72}{12.07} = \text{Rs. } 615$$

$$\text{Employee 2001170} \equiv \frac{117.46}{8.5} = \text{Rs. } 13.8$$

$$\text{Employee 2001177} \equiv \frac{726.19}{19} = \text{Rs. } 38.2$$

Hence, **option 1**.

**Q7.** There are 10 employees who are engaged in both complex and medium operations.

For employee 2001148:

$$\text{The amount earned in Medium operations} = 513.26 - 51.53 - 3 = 458.73$$

$$\frac{51.53}{3.33} < \frac{458.73}{1.67}$$

For employee 2001151:

$$\text{The amount earned in Medium operations} = 282.81 - 171.71 - 79.1 = 32$$

$$\frac{171.71}{5.5} > \frac{32}{4}$$

For employee 2001155:

$$\text{The amount earned in Medium operations} = 597.94 - 497.47 - 100.47 = 0$$

Hence, the average amount earned per day in Medium operations =  $0/4.67 = 0$

Hence, the average amount earned per day in Complex operations is more.

For employee 2001159:

$$\frac{594.43}{9.67} > \frac{159.64}{13.33}$$

For employee 2001162:

$$\frac{472.51}{1.29} > \frac{109.73}{9.71}$$

For employee 2001165:

$$\frac{402.25}{5.27} > \frac{735.72}{12.07}$$

For employee 2001169:

$$\frac{288.48}{8.38} > \frac{6.1}{4.25}$$

For employee 2001170:

$$\frac{812.1}{10} > \frac{117.46}{8.5}$$

For employee 2001177:

$$\frac{46.56}{2} < \frac{726.19}{19}$$

For employee 2001180:

$$\frac{116.4}{5} < \frac{1262.79}{19}$$

∴ There are 7 employees for whom per day earnings in complex operations is more than per day earnings in medium operations.

Hence, option 4.

**Q8 to Q15:**

**Q8.**

Total revenue in 1999 = 3314

$$\therefore 5\% \text{ of the total revenue in 1999} = \frac{5}{100} \times 3314$$

$$= 165.7$$

The operations of Spain, the Rest of Latin America, the Northern Sea and the Rest of the World are less than

165.7.

Hence, option 3.

**Q9** Total revenues earned from 1999 to 2000 = 3314 + 8328 = 11642

5% of 11642 = 582.1

There are only three operations, Spain, the Northern Sea and Rest of the World, whose gross revenues for these two years is less than 582.1.

Hence, option 3.

**Q10** Only North Africa and the Middle East, Argentina, the Rest of Latin America and the Far East experience a sustained increase.

∴ There are 4 regions.

Hence, option 2.

**Q11** The average increase in income before taxes and charges from 1998 to 1999 (ignoring the loss making operations)

$$= \frac{(7 - 31) + (341 - 111) + (838 - 94) + (97 - 19) + (75 - 86)}{5}$$

$$= 1077/5 = 215.4$$

Looking at the Incomes of the various operations in 1998 and 1999, it is clear that Argentina and the Far East definitely have percentage increases of more than 400%. It is also clear that all the other operations (except North America and the Middle East) will have percentage increases less than 200%.

$$-9 = \frac{341 - 111}{111} \times 100 \approx 210$$

Hence, **option 3.**

**Q12** Consider option 1:

Probability of Far East operations in 1998

$$= \frac{10}{63} = 0.158$$

Probability of Far East operations in 1999

$$= \frac{58}{204} = 0.284$$

Probability of Far East operations in 2000

$$= \frac{189}{311} = 0.607$$

The profitability is highest for the year 2000.

∴ Option 1 is false.

Consider option 2:

$$\begin{aligned} \text{Probability of Northern Sea operations in 1998} &= \frac{24}{52} \\ &= 0.462 \end{aligned}$$

$$\begin{aligned} \text{Probability of Northern Sea operations in 1999} &= \frac{54}{65} \\ &= 0.831 \end{aligned}$$

Profitability is increased from 1998 to 1999.

∴ Option 2 is true.

Consider option 3

$$\begin{aligned} \text{Probability of Argentina operations in 1998} &= \frac{61}{187} \\ &= 0.326 \end{aligned}$$

$$\begin{aligned} \text{Probability of Argentina operations in 1999} &= \frac{500}{1168} \\ &= 0.428 \end{aligned}$$

Profitability has increased from 1998 to 1999.

∴ Option 3 is false.

Hence, **option 2**.

**Q13**

Operations	Profitability in 2000
North Africa and Middle East	$\frac{356}{530} < \frac{400}{500} = 0.8$
Spain	$\frac{225}{43} < \frac{225}{45} = 5$
Rest of Latin America	$\frac{169}{252} < \frac{250}{250} = 1$
Far East	$\frac{189}{311} < \frac{210}{300} = 0.7$

The profitability for the given options are as given in the above table.

Spain has the best profitability.

Hence, **option 2**.

**Q14**

Operations	Ration of Revenue to Expense 2000
Spain	$\frac{394}{43} > \frac{360}{45} = 8$
North Africa and Middle East	$\frac{1290}{530} > \frac{1200}{600} = 2$
Argentina	$\frac{5539}{2840} > 1$
Rest of Latin America	$\frac{482}{252} > \frac{390}{260} = \frac{3}{2}$
Far East	$\frac{603}{311} > 1$
Rest of the World	$\frac{20}{33} < 1$

Efficiency for all operations in 2000 is shown in the above table.

Efficiency is the least for the Rest of the World.

Hence, **option 4**.

**Q15**

Option 1 is true as Spain has the best efficiency in 2000.

Consider option 2:

$$\text{Efficiency of Far East operations in 1999} = \frac{301}{204} \approx 1.5$$

$$\text{Efficiency of Far East operations in 2000} = \frac{603}{311} \approx 2$$

Efficiency has improved from 1999 to 2000.

∴ Option 2 is true.

Consider option 3:

$$\begin{aligned} \text{Efficiency of Northern Sea operations in 1998} &= \frac{78}{52} \\ &= 1.5 \end{aligned}$$

$$\begin{aligned} \text{Efficiency of Northern Sea operations in 1999} &= \frac{140}{65} \\ &= 2.2 \end{aligned}$$

Efficiency has improved from 1998 to 1999.

∴ Option 3 is true.

Consider option 4:

Option 4 is false as in the year 1998, the operations in the Rest of the World was the least efficient.

Hence, **option 4**.

### Questions 16 to 18 :

#### Q16

Observe the values of Production and Total Area. We can see that the figure for production is more than 4 times the figure for Total Area only for Haryana and Punjab.

For all the other states, it is less than 4 times the figure for Total Area. Therefore, the highest productivity is for Haryana and Punjab.

Hence, option 1.

#### Q17.

Per capita production of rice for Gujarat =  $24/51 = 48/102$  48%

∴ We shall look for values of production that are close to half or more than half of the population.

We can see that only Haryana, Punjab, Maharashtra and Andhra Pradesh satisfy this criterion.

Hence, option 2.

#### Q18.

We are looking for states with Production in million tons  $\times$  106/population in millions  $>$   $4 \times 105$  i.e. production in million tons  $\times 10 > 4 \times$  population in millions Haryana, Gujarat, Punjab, Madhya Pradesh, Tamilnadu, Maharashtra, Uttar Pradesh and Andhra Pradesh are such states.

Hence, option 4.

### Question 19 to 21 :

#### Q19.

Apart from Parul and Hari, at least one female should attend the CS workshop. Also, the two selected for the CS workshop should not be committed to internal projects in January. Consider the options.

In options 2, 3 and 4, Dinesh, Anshul, Fatima and Zeena are committed to internal projects in January. Employees in option 1 i.e. Rahul and Yamini can attend the CS workshop.

Hence, option 1.

**Q20.**

Dinesh, Gayatri, Kalindi, Parul, Urvashi and Zeena are executives. Out of these, Dinesh, Kalindi and Parul can attend two workshops each. The rest attend less than two i.e. not more than one workshop.

Hence, option 2.

**Q21.**

Consider the options.

Option 1: Lavanya can attend 2 workshops.

Option 3 and 4: Mandeep can attend 1 workshop.

All the employees in option 2 are unable to attend any workshop.

Hence, option 2.

**for Questions 22 to 26:**

**Q22.** Possible routes from A to J are as shown in the table below.

The shortest distance is by the route A-C-F-J.

The price is  $1350 + 430 + 1150 = \text{Rs. } 2930$

Hence, option 4.

**Q23.** The current market price paid by the customers is Rs. 2275 (A-H-J).

Therefore, the company should charge  $(2275 \times 0.95) = \text{Rs. } 2161.25$

Hence, option 2.

**Q24.** If C, D and H are closed, the cheapest route will be A-F-J and it will cost Rs. 2850.

Hence, option 3.

**Q25.** The minimum cost per km that the company incurs would correspond to the minimum price per km route.

By observation from the table, minimum price per kilometre is for the route AHJ

and  $= 275/2350 = 0.97$

Minimum cost per kilometre  $= 0.97/1.1 = 0.88$

Hence, option 2.

**Q26.** Even if the margin for the prices changes the minimum cost per km would correspond to the same route namely A-H-J.

$\therefore$  From the table, the distance for the travel = 2350 km

Hence, option 4.