

QUANTITATIVE APTITUDE

1. The time taken by a boat to travel a distance downstream is half the time taken by it to travel the same distance upstream. What is the speed of the boat downstream if it travels 7.5 km upstream in 1 hour 30 minutes ? (in km/h)
- (1) 7.5
(2) 5
(3) 9
(4) 10
(5) None of these

Solution:4

(4) Time taken in covering 7.5

km upstream = $\frac{3}{2}$ hours

\therefore Time taken in covering 7.5

km downstream = $\frac{3}{4}$ hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

\therefore Rate downstream of boat

$$= \frac{7.5}{\frac{3}{2}} = \left(\frac{7.5 \times 2}{3} \right) \text{ kmph}$$

$$= 5 \text{ kmph}$$

Rate downstream of boat

$$= \frac{7.5 \times 4}{3} = 10 \text{ kmph}$$

Directions (2-6) : In these questions, two equations numbered I and II are given. You have to solve both the equations and select the appropriate option.

2. I. $x^2 = 144$
II. $y^2 - 24y + 144 = 0$

- (1) $x \leq y$
- (2) $x \geq y$
- (3) relationship between x and y cannot be determined
- (4) $x < y$
- (5) $x > y$

Solution:1

$$(1) \text{ I. } x^2 = 144$$

$$\Rightarrow x = \sqrt{144} = \pm 12$$

$$\text{II. } y^2 - 24y + 144 = 0$$

$$\Rightarrow (y - 12)^2 = 0$$

$$\Rightarrow y - 12 = 0 \Rightarrow y = 12$$

$$3. \text{ I. } 2x^2 - 9x + 10 = 0$$

$$\text{II. } 2y^2 - 13y + 20 = 0$$

- (1) $x \leq y$
- (2) $x \geq y$
- (3) relationship between x and y cannot be determined
- (4) $x < y$
- (5) $x > y$

Solution:2

$$(2) \text{ I. } 2x^2 - 9x + 10 = 0$$

$$\Rightarrow 2x^2 - 4x - 5x + 10 = 0$$

$$\Rightarrow 2x(x - 2) - 5(x - 2) = 0$$

$$\Rightarrow (x - 2)(2x - 5) = 0$$

$$\Rightarrow x = 2 \text{ or } \frac{5}{2}$$

$$\text{II. } 2y^2 - 13y + 20 = 0$$

$$\Rightarrow 2y^2 - 8y - 5y + 20 = 0$$

$$\Rightarrow 2y(y - 4) - 5(y - 4) = 0$$

$$\Rightarrow (y - 4)(2y - 5) = 0$$

$$\Rightarrow y = 4 \text{ or } \frac{5}{2}$$

$$4. \text{ I. } 2x^2 + 15x + 27 = 0$$

$$\text{II. } 2y^2 + 7y + 6 = 0$$

- (1) $x \leq y$
- (2) $x \geq y$
- (3) relationship between x and y cannot be determined

(4) $x < y$

(5) $x > y$

Solution:4

(4) I. $2x^2 + 15x + 27 = 0$

$$\Rightarrow 2x^2 + 6x + 9x + 27 = 0$$

$$\Rightarrow 2x(x + 3) + 9(x + 3) = 0$$

$$\Rightarrow (2x + 9)(x + 3) = 0$$

$$\Rightarrow x = -\frac{9}{2} \text{ or } -3$$

II. $2y^2 + 7y + 6 = 0$

$$\Rightarrow 2y^2 + 4y + 3y + 6 = 0$$

$$\Rightarrow 2y(y + 2) + 3(y + 2) = 0$$

$$\Rightarrow (2y + 3)(y + 2) = 0$$

$$\Rightarrow y = -\frac{3}{2} \text{ or } -2$$

Clearly, $x < y$

5. I. $3x^2 - 13x + 12 = 0$

II. $3y^2 - 13y + 14 = 0$

(1) $x \leq y$ (2) $x \geq y$

(3) relationship between x and y cannot be determined

(4) $x < y$

(5) $x > y$

Solution:3

(3) I. $3x^2 - 13x + 12 = 0$

$$\Rightarrow 3x^2 - 4x - 9x + 12 = 0$$

$$\Rightarrow x(3x - 4) - 3(3x - 4) = 0$$

$$\Rightarrow (3x - 4)(x - 3) = 0$$

$$\Rightarrow x = \frac{4}{3} \text{ or } 3$$

II. $3y^2 - 13y + 14 = 0$

$$\Rightarrow 3y^2 - 6y - 7y + 14 = 0$$

$$\Rightarrow 3y(y - 2) - 7(y - 2) = 0$$

$$\Rightarrow (3y - 7)(y - 2) = 0$$

$$\Rightarrow y = \frac{7}{3} \text{ or } 2$$

6. I. $5x^2 + 8x + 3 = 0$

II. $3y^2 + 7y + 4 = 0$

- (1) $x \leq y$
- (2) $x \geq y$
- (3) relationship between x and y cannot be determined
- (4) $x < y$
- (5) $x > y$

Solution:2

$$\begin{aligned} \text{(2) I. } 5x^2 + 8x + 3 &= 0 \\ \Rightarrow 5x^2 + 5x + 3x + 3 &= 0 \\ \Rightarrow 5x(x+1) + 3(x+1) &= 0 \\ \Rightarrow (5x+3)(x+1) &= 0 \end{aligned}$$

$$\Rightarrow x = \frac{-3}{5} \text{ or } -1$$

$$\begin{aligned} \text{II. } 3y^2 + 7y + 4 &= 0 \\ \Rightarrow 3y^2 + 3y + 4y + 4 &= 0 \\ \Rightarrow 3y(y+1) + 4(y+1) &= 0 \\ \Rightarrow (y+1)(3y+4) &= 0 \end{aligned}$$

$$\Rightarrow y = -1 \text{ or } \frac{-4}{3}$$

Clearly, $x \geq y$

Directions (7-11) : What approximate value will come in place of, the question mark (?) in the following questions ? (You are not expected to calculate the exact value).

7. $1559.95 - 7.99 \times 24.96 = 1154$

- (1) 14
- (2) 24
- (3) 32
- (4) 18
- (5) 8

Solution:1

$$\begin{aligned} \text{(1) } 1560 - 8 \times 25 - ?^2 &\approx 1154 \\ \Rightarrow 1560 - 200 - ?^2 &\approx 1154 \\ \Rightarrow 1360 - ?^2 &\approx 1154 \\ \Rightarrow ?^2 &\approx 1360 - 1154 \approx 206 \\ \Rightarrow ? &\approx \sqrt{206} \approx 14 \end{aligned}$$

8. $1599 \div 39.99 + \frac{4}{5} \times 2449 - 120.05 = ?$

- (1) 1680
- (2) 1940
- (3) 1640
- (4) 1880
- (5) 1780

Solution:4

$$\begin{aligned} (4) ? &\approx 1600 \div 40 + \frac{4}{5} \times 2450 \\ &- 120 \\ &\approx 1600 \div 40 + 1960 - 120 \\ &\approx 40 + 1960 - 120 \approx 1880 \end{aligned}$$

9. $1576 \div 45.02 + 23.99 \times \sqrt{255}$
= ?

- (1) 340
- (2) 420.
- (3) 380
- (4) 460
- (5) 360

Solution:2

$$\begin{aligned} (2) ? &\approx 1575 \div 45 + 24 \times \sqrt{256} \\ &\approx 35 + 24 \times 16 \approx 35 + 384 \approx 419 \end{aligned}$$

10. $? + 30.01\% \text{ of } 651 \div 25.05\% \text{ of } 59.98 = 135$

- (1) 68
- (2) 140
- (3) 122
- (4) 78
- (5) 128.5

Solution:5

$$\begin{aligned} (5) ? + \frac{30 \times 650}{100} &\div \frac{25 \times 60}{100} \\ &\approx 135 \\ \Rightarrow ? + 195 \div 2 \times 15 &\approx 135 \\ \Rightarrow ? + 6.5 &\approx 135 \\ \Rightarrow ? &\approx 135 - 6.5 \approx 128.5 \end{aligned}$$

11. $3899 \div 11.99 - 2379 \div 13.97 = ?$

- (1) 125
- (2) 250
- (3) 155
- (4) 135
- (5) 225

Solution:3

$$(3) ? \approx 3900 \div 12 - 2380 \div 14 \\ \approx 325 - 170 \approx 155$$

12. 'A' gave 25% of an amount to 'B'. from the money B got, he spent 30% on a dinner. Out of the ;remaining amount, the respective ratio between the amount B kept as savings and the amount he spent on buying a book is 5 : 2. If B bought the book for Rs. 460, how much money did A have in the beginning ?

- (1) Rs. 12600
- (2) Rs. 9200
- (3) Rs. 12000
- (4) Rs. 9000
- (5) Rs. 8000

Solution:2

(2) Amount got by B = Rs. x
(let)

$$\text{Expense on dinner} = \text{Rs. } \frac{3x}{10}$$

$$\text{Remaining amount} = x - \frac{3x}{10}$$

$$= \frac{10x - 3x}{10} = \text{Rs. } \frac{7x}{10}$$

$$\text{Expense on book} = \text{Rs. } 460$$

$$\Rightarrow \frac{7x}{10} \times \frac{2}{7} = 460$$

$$\Rightarrow \frac{x}{5} = 460$$

$$\Rightarrow x = 5 \times 460 = \text{Rs. } 2300$$

$$\therefore \text{Initial amount with A} \\ = \text{Rs. } (2300 \times 4) = \text{Rs. } 9200$$

13. The respective ratio of the sums invested for 2 years each, in scheme A offering 20% per annum compound interest (compounded annually) and in Scheme B offering 9% p.a. simple interest is 1 : 3. Difference between the interests earned from both the schemes is Rs, 12000. How much was invested in scheme A ?
- (1) Rs. 10500
(2) Rs. 15000
(3) Rs. 12000
(4) Rs. 12500
(5) Rs. 10000

Solution:3

(3) Amount invested in scheme

A = Rs. x (let)

Amount invested in scheme B

= Rs. $3x$

C.I. obtained from scheme A

$$= P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

$$= \text{Rs. } x \left[\left(1 + \frac{20}{100} \right)^2 - 1 \right]$$

$$= \text{Rs. } x \left[\left(1 + \frac{1}{5} \right)^2 - 1 \right]$$

$$= \text{Rs. } x \left[\left(\frac{6}{5} \right)^2 - 1 \right]$$

$$= \text{Rs. } x \left(\frac{36}{25} - 1 \right) = \text{Rs. } \left(\frac{11x}{25} \right)$$

S.I. from scheme B

$$\begin{aligned}
 &= \frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100} \\
 &= \frac{3x \times 2 \times 9}{100} = \text{Rs. } \frac{54x}{100} \\
 \therefore \frac{54x}{100} - \frac{11x}{25} &= 1200 \\
 \Rightarrow \frac{54x - 44x}{100} &= 1200 \\
 \Rightarrow \frac{10x}{100} &= 1200 \\
 \Rightarrow x &= 1200 \times 10 = \text{Rs. } 12000
 \end{aligned}$$

14. A bag contains 4 red, 5 yellow and 6 pink balls. Two balls are drawn at random. What is the probability that none of the balls drawn are yellow in colour ?

- (1) $\frac{1}{7}$
- (2) $\frac{3}{7}$
- (3) $\frac{2}{7}$
- (4) $\frac{5}{14}$
- (5) $\frac{9}{14}$

Solution:2

(2) Total number of balls in the bag = $4 + 5 + 6 = 15$

Total possible outcomes

= Selection of 2 balls out of 15 balls

$$= {}^{15}C_2 = \frac{15 \times 14}{1 \times 2} = 105$$

Total favourable outcomes

= Selection of 2 balls out of 4 orange and 6 pink balls

$$= {}^{10}C_2 = \frac{10 \times 9}{1 \times 2} = 45$$

∴ Required probability

$$= \frac{45}{105} = \frac{3}{7}$$

15. 18 men can complete a project in 30 days and 16 women can complete the same project in 36 days. 15 men start working and after 9 days they are replaced by 18 women. In how many days will 18 women complete the remaining work ?

(1) 20

(2) 30

(3) 28

(4) 28

(5) 24

Solution:5

(5) Work done by 15 men in 9 days = W_2 (let)

$$\therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\Rightarrow \frac{18 \times 30}{1} = \frac{15 \times 9}{W_2}$$

$$\Rightarrow 18 \times 30 \times W_2 = 15 \times 9$$

$$\Rightarrow W_2 = \frac{15 \times 9}{18 \times 30} = \frac{1}{4}$$

$$\text{Remaining work} = 1 - \frac{1}{4} = \frac{3}{4}$$

Again, 16 women complete the project in 36 days.

$$\therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\Rightarrow \frac{16 \times 36}{1} = \frac{18 \times D_2}{\frac{3}{4}}$$

$$\Rightarrow 18 \times D_2 = \frac{3}{4} \times 16 \times 36$$

$$= 27 \times 16$$

$$\Rightarrow D_2 = \frac{27 \times 16}{18} = 24 \text{ days}$$

Directions (16-20) : What will come in place of the question mark (?) in the following number series ?

16. 155 151 144 132 113 ?

(1) 89

(2) 71

(3) 85

(2) 92

(5) 60

Solution:3

(3) The pattern is :

$$155 - 4 = 151$$

$$151 - 7 (= 4 + 3) = 144$$

$$144 - 12 (= 7 + 5) = 132$$

$$132 - 19 (= 12 + 7) = 113$$

$$113 - 28 (= 19 + 9) = \boxed{85}$$

17. 18 18 24 48 108 ?

(1) 254

(2) 228

(3) 212

(4) 176

(5) 194

Solution:2

(2) The pattern is :

$$18 + (1^3 - 1) = 18 + 0 = 18$$

$$18 + (2^3 - 2) = 18 + 6 = 24$$

$$24 + (3^3 - 3) = 24 + 24 = 48$$

$$48 + (4^3 - 4) = 48 + (64 - 4) = 108$$

$$108 + (5^3 - 5) = 108 + 120$$

$$= \boxed{228}$$

18. 9 10.8 14.4 21.6 ? 64.8

(1) 36

(2) 44

(3) 34

(4) 41.8

(5) 37.6

Solution:1

(1) The pattern is :

$$9 + 1.8 = 10.8$$

$$10.8 + 2 \times 1.8 = 10.8 + 3.6 \\ = 14.4$$

$$14.4 + 2 \times 3.6 = 14.4 + 7.2 \\ = 21.6$$

$$21.6 + 2 \times 7.2 = 21.6 + 14.4$$

$$= \boxed{36}$$

$$36 + 2 \times 14.4 = 36 + 28.8 = 64.8$$

19. 6 5 8 21 80

(1) 268

(2) 192

(3) 255

(4) 364

(5) 395

Solution:5

(5) The pattern is :

$$6 \times 1 - 1 = 6 - 1 = 5$$

$$5 \times 2 - 2 = 10 - 2 = 8$$

$$8 \times 3 - 3 = 24 - 3 = 21$$

$$21 \times 4 - 4 = 84 - 4 = 80$$

$$80 \times 5 - 5 = 400 - 5 = \boxed{395}$$

20. 13 6 5 6 10 ?

(1) 19

(2) 25

(3) 17.5

(4) 28

(5) 22.5

Solution:5

(5) The pattern is :

$$13 \times 0.5 - 0.5 = 6.5 - 0.5 = 6$$

$$6 \times 1 - 1 = 6 - 1 = 5$$

$$5 \times 1.5 - 1.5 = 7.5 - 1.5 = 6$$

$$6 \times 2 - 2 = 12 - 2 = 10$$

$$10 \times 2.5 - 2.5 = 25 - 2.5 =$$

$$= \boxed{22.5}$$

21. A trader has 600 kgs of rice, a part of which he sells at 15% profit and the remaining quantity at 20% loss. On the whole, he incurs an overall loss of 6%. What is the quantity of rice he sold at 20% loss ?

(1) 250 kgs

(2) 320 kgs

(3) 420 kgs

(4) 360 kgs

(5) 480 kgs

Solution:4

(4) Quantity of rice sold at 20% loss = x kg (let)

\therefore Quantity of rice sold at 15% gain = $(600 - x)$ kg

According to the question,

$$(600 - x) \times \frac{115}{100} + \frac{x \times 80}{100} =$$

$$= \frac{600 \times 94}{100}$$

$$\Rightarrow 115 \times 600 - 115x + 80x$$

$$= 600 \times 94$$

$$\Rightarrow 69000 - 35x = 56400$$

$$\Rightarrow 35x = 69000 - 56400$$

$$\Rightarrow 35x = 12600$$

$$\Rightarrow x = \frac{12600}{35}$$

$$= 360 \text{ kg}$$

22. A vessel contains a mixture of Grape, Pineapple and Banana juices in the respective ratio of 4 : 6 : 5. 15 litres of this mixture is taken out and 8 litres of grape juice and 2 litres of pineapple juice is added to the vessel. If the resultant quantity of grape juice is 10 litres less than the resultant quantity of pineapple juice. what was the initial quantity of mixture in the vessel ? (in litres)

(1) 120

(2) 150

(3) 105

(4) 135

(5) 90

Solution:4

(4) Total initial quantity of juice in the vessel = $4x + 6x + 5x = 15x$ litres

In 15 litres of juice,

Grapes's juice = 4 litres

Pineapple's juice = 6 litres

Banana's juice = 5 litres

According to the question,

$$(6x - 6 + 2) - (4x - 4 + 8) = 10$$

$$\Rightarrow 6x - 4 - 4x - 4 = 10$$

$$\Rightarrow 2x - 8 = 10$$

$$\Rightarrow 2x = 10 + 8 = 18$$

$$\Rightarrow x = 9$$

\therefore Initial quantity of mixture = $15x$

$$= 15 \times 9 = 135 \text{ litres}$$

23. 'B' is 3 years older than 'A' and 'B' is also 3 years younger than 'C'. 3 years hence, the respective ratio between the ages of A and C will be 4 : 5 What is the sum of the present ages of A, B and C ?

- (1) 48 years
- (2) 56 years
- (3) 63 years
- (4) 84 years
- (5) 72 years

Solution:

(5) According to the question,

$$B = A + 3 \Rightarrow A = B - 3$$

$$\text{and } B = C - 3 \Rightarrow C = B + 3$$

Again, after 3 years,

$$\frac{B - 3 + 3}{B + 3 + 3} = \frac{4}{5}$$

$$\Rightarrow \frac{B}{B + 6} = \frac{4}{5}$$

$$\Rightarrow 5B = 4B + 24$$

$$\Rightarrow 5B - 4B = 24$$

$$\Rightarrow B = 24$$

$$\therefore A + B + C = B - 3 + B + B + 3 \\ = 3B = 3 \times 24 = 72 \text{ years}$$

24. If the volume and curved surface area of a cylinder are 616 m³ and 352 m² respectively what is the total surface area of the cylinder (in m²)
- (1) 429
(2) 419
(3) 435
(4) 421
(5) 417

Solution:1

(1) Volume of cylinder = $\pi r^2 h$
 \therefore Curved surface area of cylinder = $2\pi r h$

$$\therefore \frac{\pi r^2 h}{2\pi r h} = \frac{616}{352}$$

$$\Rightarrow r = \frac{2 \times 616}{352} = 3.5 \text{ metre}$$

$$\therefore \pi r^2 h = 616$$

$$\Rightarrow \frac{22}{7} \times 3.5 \times 3.5 \times h = 616$$

$$\Rightarrow 11 \times 3.5 \times h = 616$$

$$\Rightarrow h = \frac{616}{11 \times 3.5} = 16$$

\therefore Total surface area of the cylinder

$$= 2\pi r h + 2\pi r^2$$

$$= 2\pi r (h + r)$$

$$= 2 \times \frac{22}{7} \times 3.5 (16 + 3.5)$$

$$= 22 \times 19.5 = 429 \text{ sq. metre}$$

Directions (25-29) : Study the table and answer the given questions.

Data related to candidates appeared and qualified from State 'X' in a competitive exam during 5 years.			
Years	No. of appeared candidates	% of appeared candidates who qualified	Respective ratio of number of qualified male and number of qualified female candidates
2006	700	—	3 : 2
2007	—	—	5 : 3
2008	480	60%	—
2009	—	42%	9 : 5
2010	900	64%	—

25. In 2010, if the number of female qualified candidates was 176, what was the respective ratio of number of male qualified candidates and number of female qualified candidates ?

- (1) 25 : 16
- (2) 5 : 4
- (3) 25 : 11
- (4) 21 : 16
- (5) 17 : 11

Solution:3

(3) Number of candidates who qualified in 2010

$$= \frac{900 \times 64}{100} = 576$$

Male candidates who qualified

$$= 576 - 176 = 400$$

$$\therefore \text{Required ratio} = 400 : 176 \\ = 25 : 11$$

26. The number of appeared candidates increased by 40% from 2006 to 2011. If 25% of the appeared candidates qualified in 2011, what was the number of qualified candidates in 2011 ?

- (1) 240
- (2) 225
- (3) 255
- (4) 245
- (5) 230

Solution:4

(4) Number of candidates who appeared at the exam in 2011

$$= \frac{700 \times 140}{100} = 980$$

Number of candidates who qualified

$$= 25\% \text{ of } 980 = \frac{980}{4} = 245$$

27. In 2007, the respective ratio of number of appeared candidates to the qualified candidates was 5 : 4. Number of female qualified candidates constitutes what percent of number of appeared candidates in the same year ?

- (1) 20
- (2) 25
- (3) 30
- (4) 15
- (5) 40

Solution:3

(3) In the year 2007,
Number of candidates who appeared = $5x$

Number of candidates who qualified = $4x$

Female candidates who qualified

$$= \frac{3}{8} \times 4x = \frac{3x}{2}$$

\therefore Required per cent

$$= \frac{3x}{2 \times 5x} \times 100 = 30\%$$

28. In 2009, if the difference between number of male qualified candidates and female qualified candidates was 72, what was the number of appeared candidates in 2009 ?

- (1) 800
- (2) 900
- (3) 850

(4) 600

(5) 950

Solution:4

(4) According to the question,

$$9x - 5x = 72 \Rightarrow 4x = 72$$

$$\Rightarrow x = \frac{72}{4} = 18$$

\therefore Total candidates who qualified = $9x + 5x = 14x$
 $= 14 \times 18 = 252$

If the number of candidates who appeared at the exam be x , then

$$\frac{42x}{100} = 252$$

$$\Rightarrow x = \frac{252 \times 100}{42} = 600$$

29. If the average number of qualified candidates in 2006 and 2008 was 249, what per cent of appeared candidates qualified in the competitive exam in 2006 ?

(1) 40

(2) 30

(3) 20

(4) 35

(5) 25

Solution:2

(2) Candidates who qualified
in 2006 = x (let)
Candidates who qualified in
2008

$$= \frac{480 \times 60}{100} = 288$$

According to the question,

$$x + 288 = 2 \times 249 = 498$$

$$\Rightarrow x = 498 - 288 = 210$$

If the percentage of candidates
who qualified in 2006 be x ,
then

$$\frac{700 \times x}{100} = 210$$

$$\Rightarrow x = \frac{210}{7} = 30\%$$

30. To reach point B from point A, at 4pm, Sara will have to travel at an average speed of 18 kmph. She will reach point B at 3 pm if she travels at an average speed of 24 kmph. At what average speed should Sara travel to reach point B at 2 pm ?
- (1) 36 kmph
 - (2) 28 kmph
 - (3) 25 kmph
 - (4) 30 kmph
 - (5) 32 kmph

Solution:1

(1) Difference of time = 1 hour

Distance = AB = x km

According to the question,

$$\frac{x}{18} - \frac{x}{24} = 1$$

$$\Rightarrow \frac{4x - 3x}{72} = 1$$

$$\Rightarrow x = 72 \text{ km}$$

Time taken at 18 kmph

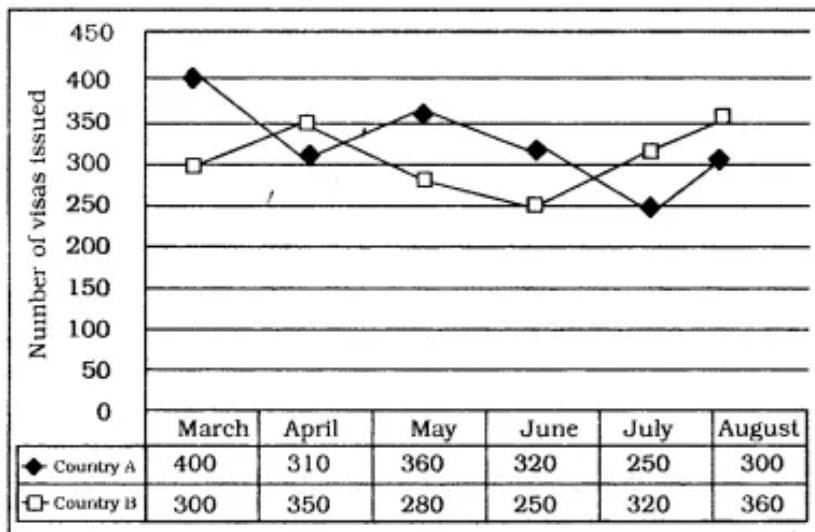
$$= \frac{72}{18} = 4 \text{ hours}$$

\therefore Speed to cover 72 km in 2 hours

$$= \frac{72}{2} = 36 \text{ kmph}$$

Directions (31-35) : Read the graph and answer the given questions.

Number of visas issued by Country ICYZ for Country A and Country B in 6 different months



31. What is the difference between the total number of visas issued for Country A and Country B together in April and the total number of visas issued for both the countries together in June ?

- (1) 90
- (2) 70
- (3) 110
- (4) 100
- (5) 80

Solution:1

$$\begin{aligned}
 & \text{(1) Required difference} \\
 &= (310 + 350) - (320 + 250) \\
 &= 660 - 570 = 90
 \end{aligned}$$

32. What is the average number of visas issued for Country B in March, May, July and August ?

- (1) 315
- (2) 310
- (3) 320
- (4) 335
- (5) 325

Solution:1

$$\begin{aligned}
 & \text{(1) Required average} \\
 &= \frac{300 + 280 + 320 + 360}{4} \\
 &= \frac{1260}{4} = 315
 \end{aligned}$$

33. The number of visas issued for Country A in March decreased by 20% from the previous month. What is the respective ratio between the number of visas issued for Country A in February and the number of visas issued for the same country in May ?

- (1) 25 : 13
- (2) 25 : 18
- (3) 26 : 13
- (4) 24 : 13
- (5) 26 : 15

Solution:2

$$\begin{aligned}
 & \text{(2) Number of visas for country A in February} \\
 &= \frac{400 \times 100}{80} = 500 \\
 & \therefore \text{Required ratio} = 500 : 360 \\
 &= 25 : 18
 \end{aligned}$$

34. The number of visas issued for Country A decreased by what per cent from May to July ?

(1) $35\frac{1}{3}$

(2) 33

(3) $30\frac{5}{9}$

(4) $32\frac{2}{3}$

(5) $32\frac{4}{9}$

Solution:3

(3) Percentage decrease

$$= \frac{360 - 250}{360} \times 100$$

$$= \frac{1100}{36} = \frac{275}{9} = 30\frac{5}{9}\%$$

35. The number of visas issued for Country B in March is what per cent less than the number of visas issued for Country A in June ?

(1) 8.5

(2) 7.75

(3) 4.25

(4) 6.25

(5) 5.75

Solution:4

(4) Required percent

$$= \frac{320 - 300}{320} \times 100$$

$$= \frac{200}{32} = 6.25$$

REASONING

Directions (1-3) : Study the following information carefully and answer the questions given below :

Each of the six persons P, Q, R, S, T and U has lived in India for a different number of days. S has stayed for more number of days than R but less than T. P has stayed for more number of days than only U. T has not stayed for the most number of days. The one stayed for the second least number of days stayed for 14 days in India. The one who stayed for second highest number of days stayed for 47 days, S stayed for 15 days less than T.

1. For how many days did R possibly stay in India ?

- (1) 56
- (2) 41
- (3) 33
- (4) 25
- (5) 11

Solution:4

(1-3)

$T > S > R$

$\square, \square, \square, \square > P > U$

$Q > T > S > R > P > U$

↓

↓

47 days

14 days

S stayed for $47 - 15 = 32$ days

(4) R stayed for more than 14

days but less than 32 days. Thus, R stayed for 25 days

2. Who amongst the following stayed for the second highest number of days ?

- (1) U
- (2) T
- (3) Q
- (4) R
- (5) P

Solution:2

(2) T stayed for the second highest number of days.

3. If the number of days for which Q stayed in India is less than 60 and is an even number which is divisible by 3 but not by 4, for how many days did Q stay in India?

- (1) 54
- (2) 42
- (3) 56
- (4) 48
- (5) 30

Solution:1

(1) Q stayed for more than 47 days. Even numbers between 47 to 60 :

48, 50, 52, 54, 56, 58

54 is divisible by 3 but not by

Directions (4-5) : Study the following information carefully and answer the questions given below :

Q is the sister of T. T is the mother of D. T has only one son. D is the brother of J. J is married to M. Y is the daughter of M.

4. How is J related to T ?

- (1) Son
- (2) Cannot be determined
- (3) Daughter
- (4) Niece
- (5) Nephew

Solution:4

(4-5):

J is the daughter of T.

T is the mother of D and J. J is the wife of M.

Y is the daughter of J and M.

(4) J is the daughter of T. Q is the sister of T.

Therefore, J is the niece of Q.

5. How is Y related to T ?

- (1) Daughter
- (2) Daughter-in-law
- (3) Cannot be determined
- (4) Niece

(5) Grand daughter

Solution:5

(5) Y is the daughter of J.

J is the daughter of T.

Therefore, Y is the grand-daughter of T.

Directions (6-10) : In each of the following questions, relationship between the different elements is shown in the statements. The statements are followed by two Conclusions numbered I and II. Study the Conclusions based on the given statements and mark the appropriate answer :

Give answer (1) if both the Conclusion I and Conclusion II are true

Give answer (2) if either Conclusion I or Conclusion II is true

Give answer (3) if neither Conclusion I nor Conclusion II is true

Give answer (4) if only Conclusion I is true

Give answer (5) if only Conclusion II is true

(6-7) : Statements

$C < R < E < A = M$; $Y > E$

6. Conclusions :

I. ' $M > R$

II. $Y > A$

Solution:4

(6-7) :

$C < R \leq E < A = M$

$Y \geq E$

$Y \geq E \leq A = M$

$C < R \leq E \leq Y$

(4) Conclusions :

I. $M \geq R$: True

II. $Y > A$: Not True

7. Conclusions :

I. $C = Y$

II. $C < Y$

Solution:5

(5) Conclusions :

I. $C = Y$: Not True

II. $C < Y$: True

(8-9) : Statements

$$B < L < A = M > E \geq S;$$

$$L > W > J$$

8. Conclusions :

I. $L < S$

II. $E > W$

Solution:3

(8-9) :

$$B < L \quad A = M \geq E \geq S$$

$$L \geq W \geq J$$

$$W \leq L \leq A = M \geq E \geq S$$

$$J \leq W \leq L \leq A = M$$

(3) Conclusions :

I. $L < S$: Not True

II. $E > W$: Not True

9. Conclusions :

I. $J < M$

II. $J = M$

Solution:2

(2) Conclusions :

I. $J < M$: Not True

II. $J = M$: Not True

J is either smaller than M or equal to M. Therefore, either Conclusion I or Conclusion II is true.

10. Statement :

$$C > H \geq O \geq K = E < D$$

Conclusions :

I. $O > D$

II. $E < C$

Solution:5

(5) $C \geq H \geq O > K = E < D$

Conclusions :

I. $O > D$: Not True

II. $E < C$: True

Directions (11-15) : Study the following information carefully and answer the questions given below :

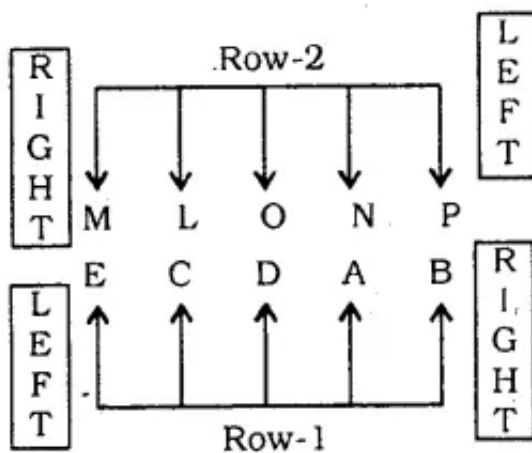
Ten persons are sitting in two parallel rows containing five people each, in such a way that there is equal distance between adjacent persons. In row-1, A, B, C, D and E are seated (but not necessarily in the same order) and all of them are facing north. In row-2, L, M, N, O and P are seated (but not necessarily in the same order) and all of them are facing south. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row. B sits second to the right of D. The person facing B sits to the immediate left of N. L sits second to the right of N. Only two persons sit between L and P. E is not an immediate neighbour of D. O does not face E. C neither faces N nor sits at an extreme end of the line.

11. Which of the following statements is TRUE regarding O?

- (1) L sits to the immediate left of O.
- (2) Only three persons sit between P and O.
- (3) O sits exactly in the middle of the row.
- (4) O faces one of the immediate neighbours of B.
- (5) None of the given statements is true

Solution:3

(11-15)



- (3) L sits to the immediate right of O.
- Only one person sits between P and O.
- O faces one of the immediate neighbours of C or A.

12. Who amongst the following is facing A?

- (1) L
- (2) M
- (3) O
- (4) P

(5) N

Solution:5.

(5) N is facing A.

13. Who amongst the following is facing M?

(1) E

(2) A

(3) D

(4) B

(5) C

Solution:1.

(1) E is facing M.

14. Four of the following five are alike in a certain way based on the given arrangement and hence form a group. Which is the one that does not belong to the group?

(1) NO

(2) CE

(3) AB

(4) PO

(5) ML

Solution:4.

(4) Except PO, in all other pairs, the two persons are immediate neighbours of each other. There is one person between O and P.

15. What is the position of C with respect to B?

(1) Second to the left

(2) Third to the left

(3) Immediate left

(4) Immediate right

(5) Second to the right

Solution:2.

(2) C sits third to the left of B.

Directions (16-20) : In each of the following questions, two/ three statements followed by two Conclusions numbered I and II have been given. You have to take the given

statements to be true even if they seem to be at variance from the commonly known facts and then decide which of the given Conclusions logically follows from the given statements disregarding commonly known facts.

Give answer (1) if both the Conclusion I and Conclusion II follow

Give answer (2) if either Conclusion I or Conclusion II follows

Give answer (3) if neither Conclusion I nor Conclusion II follows

Give answer (4) if only Conclusion I follows

Give answer (5) if only Conclusion II follows

(16-17) : Statements :

No ground is a soil.

All soils are basins.

Some basins are deltas.

16. Conclusions :

I. No delta is a soil.

II. Some grounds being deltas is a possibility.

Solution:5.

(16-20) :

(i) All soils are basins → Universal Affirmative (A-type).

(ii) Some basins are deltas → Particular Affirmative (I-type).

(iii) No ground is a soil → Universal Negative (E-type).

(iv) Some grounds are not soils → Particular Negative (O-type). (81-82) :

No ground is a soil.

All soils are basins.

(16-17)

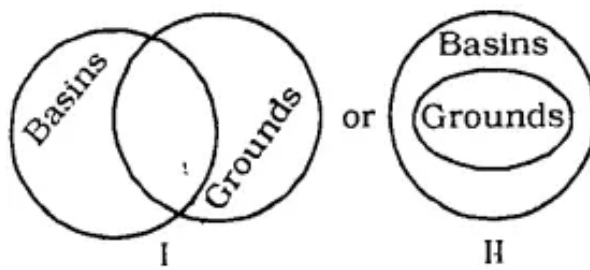
No ground is a soil.

All soils are basins.

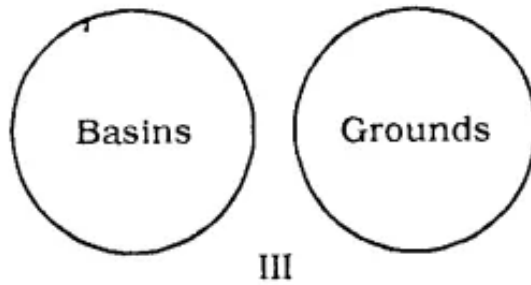
$E + A \Rightarrow O_1$ - type of Conclusion

"Some basins are not grounds".

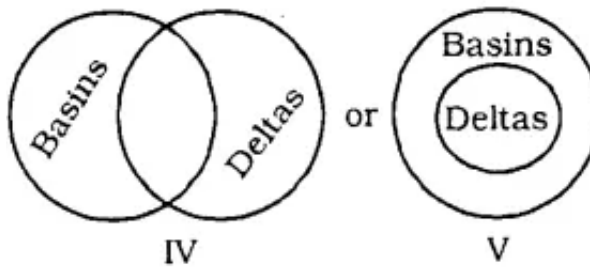
(5) Venn diagrams of "Some basins are not grounds" :



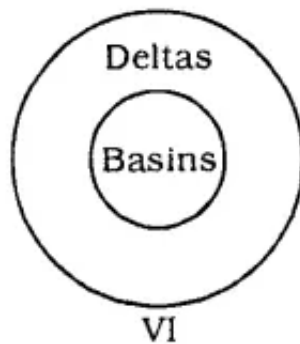
or



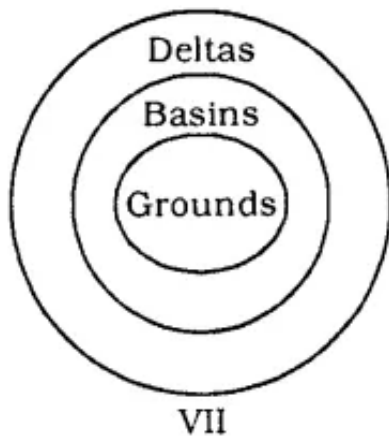
Venn diagrams of "Some basins are deltas".



or



After combining the Venn diagrams II and VI, we get :



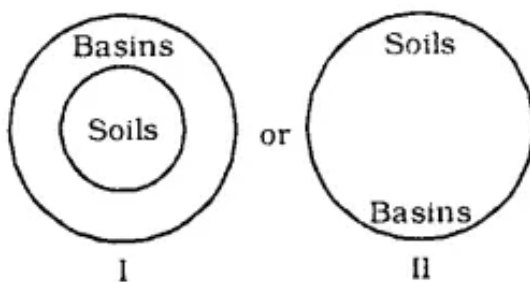
Venn diagram VII supports the Conclusion II.

17. Conclusions :

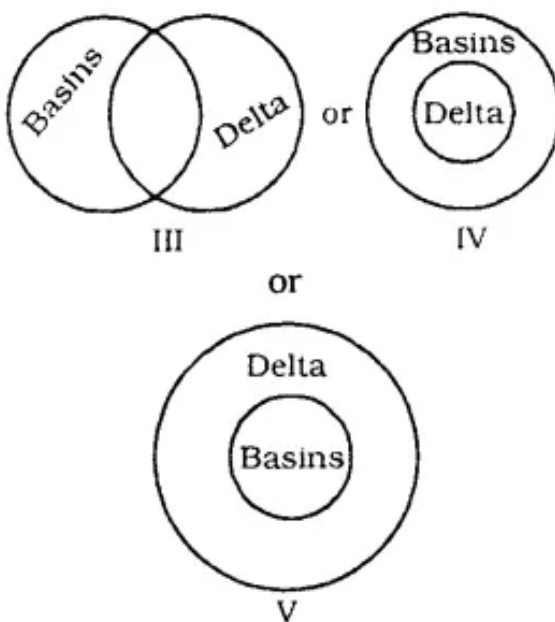
- I. At least some soils are deltas.
- II. All basins are soils.

Solution:4

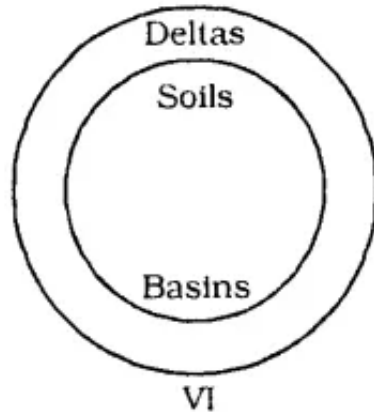
(4) Venn diagrams of "All soils are basins" :



Venn diagrams of "Some basins are deltas":



After combining the Venn diagrams II and V, we get :



Venn diagram VI supports the Conclusion I.

18. Statements :

All policies are decisions.

No decision is a verdict.

No verdict is a result.

Conclusions :

I. All results being policies is a possibility.

II. No verdict is a policy.

Solution:5

(5)

All policies are decisions.

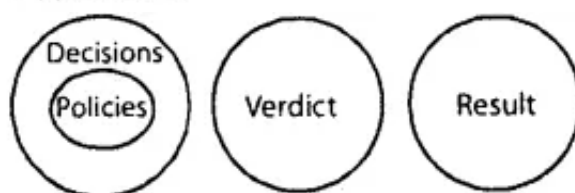
No decision is a verdict.

$A + E \Rightarrow E\text{-type of Conclusion}$

"No policy is a verdict."

Conclusion II is the Converse of it.

Venn diagrams of all the three Premises :



19. **Statements :**

Some calculators are machines.

No calculator is a phone.

Conclusions :

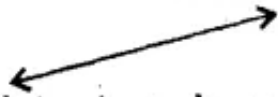
I. Some machines are phones.

II. No machine is a phone.

Solution:2

(2)

Some machines are calculators.



No calculator is a phone.

$I + E \Rightarrow O$ -type of Conclusion

"Some machines are not phones."

Conclusions I and II form Complementary Pair. Therefore, either Conclusion I or Conclusion II follows.

20. **Statements :**

All seasons are winters.

Some winters are autumns.

All autumns are falls.

Conclusions :

I. At least some falls are winters.

II. At least some autumns are seasons.

Solution:1

Some winters are autumns.

(1)



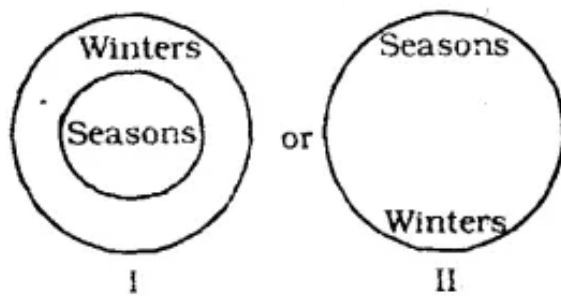
All autumns are falls.

$I + A \Rightarrow I$ - type of Conclusion

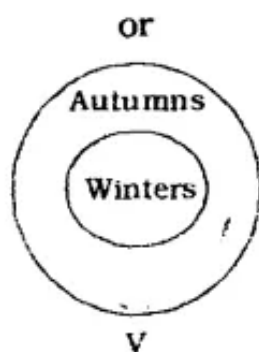
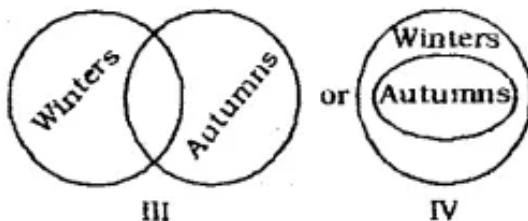
"Some winters are falls."

Conclusion I is the Converse of it.

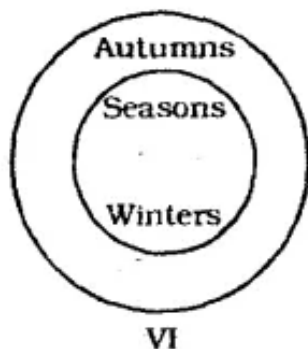
Venn diagrams of "All seasons are winters" :



Venn diagrams of "Some winters are autumns" :



After combining the Venn diagrams II and V, we get :



Venn diagram VI supports the Conclusion II.

Directions (21-25) : Study the following information carefully and answer the questions given below :

In a certain code language,

'always follow your passion' is written as "ke ag mo jp'.

'great passion for music' is written as 'mo bu sc nd'.

'music always on mind' is written as 'fi sc ag lw'.

'follow music on twitter' is written as 'ty jp fi Sc'.

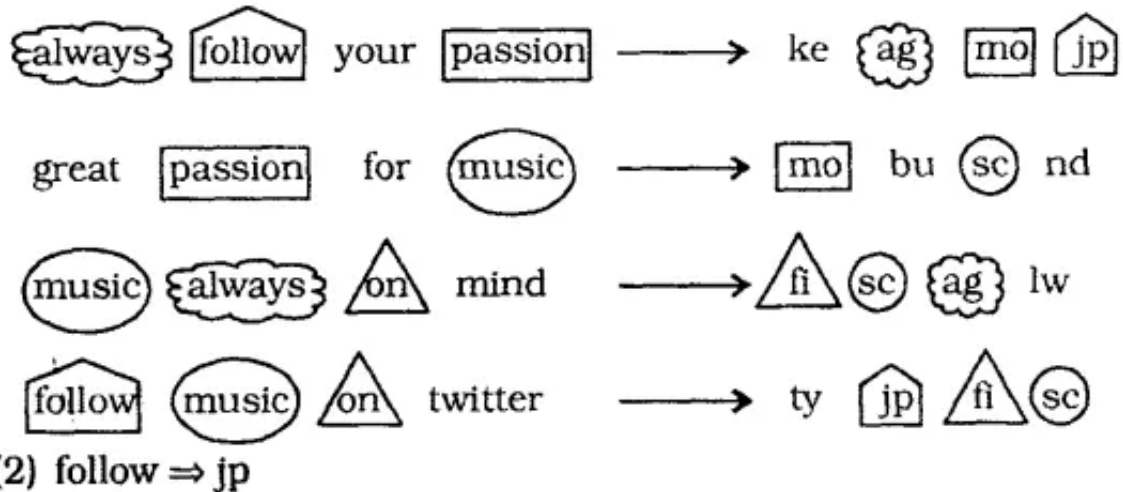
(All codes are two-letter codes only)

21. What is the code for 'follow' in the given code language

- (1) ke
- (2) jp
- (3) Other than those given as options
- (4) fi
- (5) sc

Solution:2

(21-25)



22. What is the code for 'mind' in the given code language ?

- (1) bu
- (2) ag
- (3) lw
- (4) ke
- (5) ty

Solution:3

(3) mind ⇒ lw

23. In the given code language, what does the code 'nd' stand for ?

- (1) either 'for' or 'great'
- (2) music
- (3) mind
- (4) always
- (5) either 'music' or 'on'

Solution:1

(1) nd ⇒ great/for

24. If 'music always help' is coded as 'ag hr sc' in the given code language, then what is the code for 'help your twitter'?
- (1) ke ty bu
 - (2) hr tw ag
 - (3) hr ke sc
 - (4) ty ke hr
 - (5) bu ty hr

Solution:4

(4) music \Rightarrow sc
always \Rightarrow ag
help \Rightarrow hr
Therefore,
help \Rightarrow hr
your \Rightarrow ke
twitter \Rightarrow ty

25. What may be the possible code for 'divine passion' in the given code language?
- (1) mo ag
 - (2) bu mo
 - (3) xy ag
 - (4) xy bu
 - (5) mo xy

Solution:5

(5) passion \Rightarrow mo
The code for 'divine' may be 'xy'.

Directions (26-30) : Study the following information carefully and answer the questions given below :

Seven persons, namely L, M, N, o, P, Q and R will appear for a different exam but not necessarily in the same order, in seven different months (of the same year) namely January, February, April, May, July, September and December. Each of them also likes a different genre of TV shows namely Family, Action, Comedy, Reality, Animated, History and Thriller but not necessarily in the same order.

o will appear for an exam in a month which has only 30 days. Only one person will appear between the one who likes animated shows and o. The one who likes Action

will appear for an exam immediately before the one who likes Animated Shows. The one who likes Thriller will appear for an exam neither in the month which has 31 days nor in the month which has 30 days. Only two persons will appear for an exam between the one who likes Thriller and Q. M will appear for an exam immediately after Q. R will appear for an exam immediately before N. P likes History shows. The one who likes Family shows will appear for an exam in a month which has 31 days. O does not like Comedy shows.

26. Which of the following genres of TV shows does O like?

- (1) History
- (2) Thriller
- (3) Family
- (4) Action
- (5) Reality

Solution:5

(26-30)

Month	Person	TV Shows
January	R	Family Show
February	N	Thriller Show
April	O	Reality Show
May	L	Action Show
July	Q	Animated Show
September	M	Comedy Show
December	P	History Show

(5) O likes Reality Show.

27. How many persons will appear for an exam between the months on which N and L will appear for an exam?

- (1) One
- (2) None
- (3) Three
- (4) Two
- (5) More than three

Solution:1

(1) Only one person.

28. As per the given arrangement, January is related to Reality shows and February is

related to Action shows following a certain pattern, with which of the following is July related to following the same pattern?

- (1) Family shows
- (2) Thriller shows
- (3) Comedy shows
- (4) History shows
- (5) Animated shows

Solution:4

(4) O likes Reality Show and he will appear in exam in April.

L likes Action Show and he will appear in exam in May. There is a gap of one between January and April here. Similarly, there is a gap of one between February and May here. Thus, July would be related to History Show.

29. Which of the following represents the month in which L will appear for an exam?

- (1) December
- (2) May
- (3) July
- (4) September
- (5) Cannot be determined

Solution:21

(2) L will appear in the exam in the month of May

30. Which of the following represents the persons who will appear for an exam in January and December respectively ?

- (1) N, P
- (2) N, M
- (3) R, P
- (4) R, M
- (5) M, P

Solution:3

(3) R will appear in the exam in the month of January.

P will appear in the exam in the month of December.

Directions (31-35) : Study the following information carefully and answer the questions given below :

Eight persons – A, B, C, D, M, N, O and P – are sitting around a circular table facing the centre with equal distances between each other (but not necessarily in the same order). Each one of them is also related to N in some way or the other.

Only three persons sit between B and N. Only one person sits between N and P.

N's father sits to the immediate right of P.

N's sister sits third to the right of N's father. Only one person sits between N's sister and N's son. M sits third to the left of N's son.

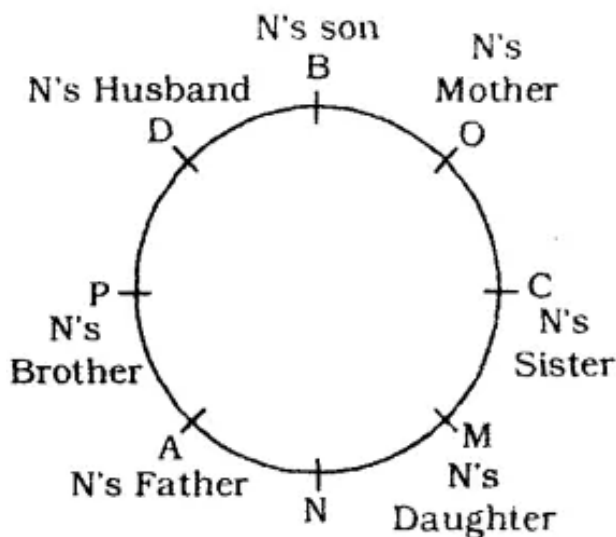
Only three persons sit between M and N's husband. A sits second to the right of N's husband. N's mother sits to the immediate right of C. C is not the husband of N.

N's daughter sits third to the right of P. D sits to the immediate left of N's brother.

31. How many persons sit between P and N, when counted from the left of N?

- (1) One
- (2) Five
- (3) Two
- (4) None
- (5) Three

Solution:1



(1) When counted from the left of N, only one person sits between P and N.

32. Which of the following statements is true with respect to the given information?

- (1) A is the son of D.
- (2) C is an immediate neighbour of D.
- (3) D sits third to the left of B.
- (4) All the given options are true.
- (5) A sits second to the right of N's husband.

Solution:5

(5) A is the father-in-law of D.

C is an immediate neighbour of O and M.

D sits to the immediate right of B.

33. Who sits to the immediate left of P?

(1) B

(2) M

(3) N's sister

(4) N's husband

(5) A

Solution:4

(4) N's husband D sits to the immediate left of P.

34. Who amongst the following is the son of N ?

(1) P

(2) B

(3) D

(4) C

(5) O

Solution:2

(2) B is the son of N.

35. How is B related to A ?

(1) Grandmother

(2) Son-in-law

(3) Grandson

(4) Uncle

(5) wife

Solution:3

(3) B is the son of N. A is the father of N.

Therefore, B is the grandson of A.