

SYMBIOSIS NATIONAL APTITUDE TEST (SNAP)

SOLVED PAPER - 2024

Held On : December 2024

Memory Based

QUANTITATIVE, DATA INTERPRETATION AND DATA SUFFICIENCY

16. On a certain principal, CI and SI at a certain rate of interest for 2 years is ₹ 16560 and ₹ 14,400/ respectively. Find the principal and rate of interest per annum.
- (a) 21,6000,13%
(b) 20,000,30%
(c) 24,000,30%
(d) 24,000,35%
17. $x + y + z = 850$. If x is reduced by 100 y reduced by 25, and z reduced by 50, then $x:y = 1:2$, $y:z = 5:6$, find original value of $x + y$
- (a) 400
(b) 500
(c) 550
(d) 350
18. Find the value of:
 $\log 87600 + \log 23100 - 8 = ?$
- (a) $\log 8.76 + \log 2.31$
(b) $\log 87.6 + \log 23.1$
(c) $\log 876 + \log 231$
(d) None of these
19. Average monthly expenditure for Ravi for January to June is ₹ 3200/ He spends ₹ 3000 in July, ₹ 3600 in August, ₹ 3900 in September, and ₹ 4200 in October. If his expenditure in November is 50% of that of December and his average monthly expenditure for the entire year is ₹ 3200/ then find Ravi's expenditure in the month of November?
- (a) 1600 (b) 1400
(c) 1700 (d) 1500

20. Ram and Shyam are 10 km apart. The both see a hot air balloon passing in the sky making an angle of 60 and 30 degree respectively. What is the height at which balloon could be flying.
- (a) $4\sqrt{3}$ (b) $5\sqrt{3}$
(c) $3\sqrt{3}$ (d) $2\sqrt{3}$
21. A manufacturer makes 1500 articles at the cost of 120 paise per article. He fixed the selling price such that if only 1200 articles were sold, he makes 80% profit in outlay. However 240 articles got spoilt and he was able to sell remaining stock at this price. Find the actual profit percentage as a percentage of total outlay.
- (a) 84 (b) 82
(c) 89 (d) 86
22. Find the missing number?

			3050			
		30		102		
	5		8		?	
5		3		6		4

- (a) 14 (b) 12
(c) None of these (d) 10

23. In a box, there are 3 red marbles, 3 blue marbles and 7 green marbles. If 2 marbles are picked randomly, find the probability of picking two non green marbles from the box.

(a) $\frac{3}{26}$ (b) $\frac{5}{26}$
(c) $\frac{9}{26}$ (d) $\frac{7}{26}$

24. ₹ 45000 was deposited for 4 years at compound interest. If the rate of interest was 6% for 1st year, and it increases by 1% every year. Then find the approx. percentage amount at the end of 4 years.

(a) 60000 (b) 70000
(c) 80000 (d) 90000

25. A shopkeeper marks 30% above the cost price and gives a discount of 15% on marked price, Apart from this, he uses a faulty balance which uses 1kg for 800g. Find his actual profit percentage.

(a) 38.125% (b) 24.425%
(c) 32.124% (d) None of these

26. Ritu wants to make a trapezium such that AB is parallel to CD. Angle ABC and BAD are 90 and 45 degree respectively. Length of CD and BC are 5cm and 4cm respectively. Find the area of trapezium.

(a) 20 cm^2 (b) None of these
(c) 28 cm^2 (d) 24 cm^2

27. In a school, if 100 students less had applied, and 50 less were selected, then the ratio of selected to unselected students would have been 7:4. So, how many students had applied if ratio of selected to unselected students was 3:2

(a) 325 (b) 415
(c) 375 (d) 425

28. Find the smallest number between 2000 and 3000 which is exactly divisible by 21, 24 and 28

(a) None of these
(b) 2000
(c) 2352
(d) 2016

29. Based on the given pattern find the next term of the given series:

5, 6, 16, 57, 244, 1245, ?

(a) 7506
(b) None of these
(c) 5500
(d) 4047

30. There are 3 different types of rice weighing 435, 493 and 551 kg respectively. The rice is packed in bags, such that no two types of rice are mixed. Find the least no of bags of equal sizes.

(a) 51 (b) 56
(c) 57 (d) 54

31. ₹ 776 is divided among 300 boys and girls in such a way that each boy gets 2.40 and each girl gets 2.80. Find the total girls.

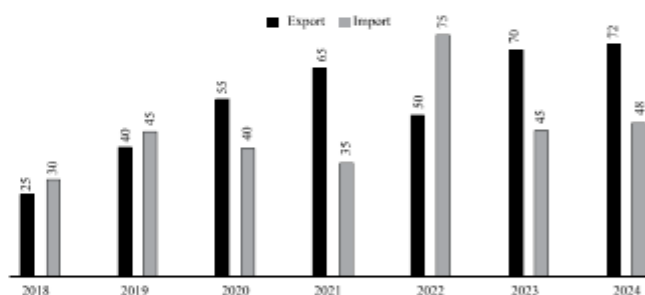
(a) 130 (b) 140
(c) 110 (d) 120

32. Sqrt of $4^{6x^2} 25^{y/2} 9z^4$

(a) $4^{3x^2} \cdot 5^y \cdot 3z^4$ (b) $4^{3x^2} \cdot 5^{y/2} \cdot 9z^2$
(c) $4^{6x} \cdot 25^{y/4} \cdot 9z^2$ (d) $4^{3x^2} \cdot 5^{y/2} \cdot 3z^4$

33. Below is the Export and Import data of a company:

Which year has the lowest percentage fall in imports from the previous year?



(a) 2021 (b) 2024
(c) 2023 (d) 2020

34. Two oranges, three bananas and four apples cost ₹ 15. Three oranges, two bananas and one apple cost ₹ 10. I bought 3 oranges, 3 bananas and 3 apples. How much did I pay ?

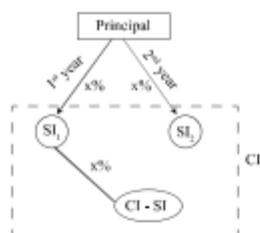
(a) ₹ 10
(b) ₹ 8
(c) Cannot be determined
(d) ₹ 15

35. Two equal glasses filled with mixtures of alcohol and water in the proportions of 2 : 1 and 1 : 1 respectively were emptied into third glass. What is the proportion of alcohol and water in the third glass?

(a) 5 : 7 (b) 7 : 5
(c) 7 : 6 (d) 6 : 7

ANSWERS WITH EXPLANATIONS

16. (c)



$$CI - SI = 16560 - 14400 = ₹ 2160$$

$$SI \text{ for 1 year} = \frac{14400}{2} = ₹ 7200$$

$$\text{Rate \%} = \frac{2160}{7200} \times 100$$

$$= \boxed{30\%}$$

$$\text{Principal} = \frac{7200}{30} \times 100$$

$$= \boxed{₹ 24,000}$$

17. (b) $x + y + z = 850$

x is reduced by 100, y is reduced by 25 and z is reduced by 50, then:

$$x : y = 1 : 2$$

$$y : z = 5 : 6$$

ATQ

$$x' : y' = 1 : 2 \Rightarrow x' = \frac{1}{2} y'$$

$$y' : z' = 5 : 6$$

$$\Rightarrow y' = \frac{5}{6} z'$$

$$x' = \frac{1}{2} \times \frac{5}{6} z'$$

$$= \frac{5}{12} z'$$

$$x' = \frac{5}{12} z'$$

$$y = \frac{5}{6} z'$$

$$\frac{5}{12} z' + 100 + \frac{5}{6} z' + 25 + (z' + 50) = 850$$

$$\frac{9}{4} z' + 175 = 850$$

$$z' = 300$$

$$x' = \frac{5}{12} z' \Rightarrow \frac{5}{12} \times 300 = 125$$

$$y' = \frac{5}{6} z' \Rightarrow \frac{5}{6} \times 300 = 250$$

$$x = x' + 100 \Rightarrow 125 + 100 = 225$$

$$y = y' + 25$$

$$\Rightarrow 250 + 25 = 275$$

$$x + y = 225 + 275 = \boxed{500}$$

18. (a) $\log a + \log b - \log c$

$$= \log \left(\frac{a \times b}{c} \right)$$

$$\text{Here, } a = 87600, b = 23100, \log c = 8 = \log_{10} 10^8$$

$$\Rightarrow c = 10^8$$

$$\therefore \log 87600 + \log 23100 - 8$$

$$= \log \left(\frac{87600 \times 23100}{10^8} \right)$$

$$= \log \left(\frac{87600}{10^4} \times \frac{23100}{10^4} \right) = \log (8.76 \times 2.31)$$

$$= \log 8.76 + \log 2.31$$

19. (d) Let the expenditure of December be x

$$3200 \times 6 + 3000 + 3600 + 3900 + 4200 + \frac{x}{2} + x$$

$$= 3200 \times 12$$

$$33900 + \frac{x}{2} + x = 38400$$

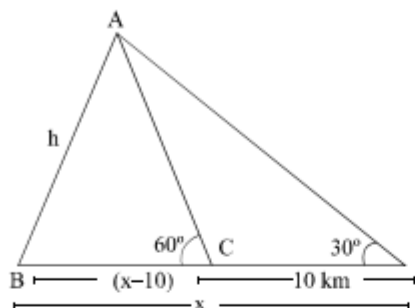
$$\frac{2x + x}{2} = 4500$$

$$3x = 9000$$

$$x = 3000$$

$$\text{November} = \frac{x}{2} = \frac{3000}{2} = ₹ 1500$$

20. (b)



In $\triangle ABC$

$$\frac{AB}{BC} = \tan 60^\circ$$

21. (c) Total cost price of 1500 articles = 1500×120 paisa
= 180000 paisa = ₹ 1800

$$\text{Profit is } 180\% \text{ of CP} = 1800 \times \frac{180}{100} = ₹ 3240$$

$$\text{Selling price of 1 article} = \frac{3240}{1200} = ₹ 2.7$$

$$\begin{aligned} &240 \text{ articles got spoilt and remaining sold at:} \\ &= (1500 - 240 - 1200) \times 2.7 \\ &= 60 \times 2.7 = 162 \end{aligned}$$

$$\text{Actual profit\%} = \frac{₹(3240 + 162) - 1800}{1800} \times 100$$

$$= \frac{1602}{1800} \times 100 = 89\%$$

22. (a) $(30 \times 102) - 10 = 3050$

$$(5 \times 8) - 10 = 30$$

$$(5 \times 3) - 10 = 5$$

$$(8 \times x) - 10 = 102$$

$$8 \times x = 112$$

$$x = 14$$

23. (b) Probability = $\frac{\text{Non-green combinations}}{\text{Total combinations}}$

$$= \frac{{}^6C_2}{{}^{13}C_2} = \frac{(6 \times 5)/2}{(13 \times 12)/2}$$

$$= \frac{15}{78} = \frac{5}{26}$$

24. (a) Amount = $P \left(1 + \frac{R}{100}\right)^T$

$$= 45000 \left(1 + \frac{6}{100}\right) \left(1 + \frac{7}{100}\right) \left(1 + \frac{8}{100}\right) \left(1 + \frac{9}{100}\right)$$

$$= 45000 \times 1.06 \times 1.07 \times 1.08 \times 1.09$$

$$= 60083.11 \sim 60,000$$

25. (a) Let the cost price be $100x$

ATQ

$$\text{Selling price} = 100x \times \frac{130}{100}$$

$$= 110.5x$$

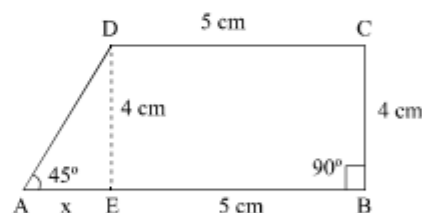
Since, the cost price of 1 kg (1000g) is $100x$, the cost

$$\text{price of 800g} = \frac{100x}{1000} \times 800 = 80x$$

$$\text{Profit percentage} = \frac{(110.5 - 80)x}{80x} \times 100$$

$$= \boxed{38.125\%}$$

26. (c) According to the question,



In $\triangle ADE$

$$\tan 45^\circ = \frac{DE}{AE} = \tan 45^\circ = \frac{4}{x} \Rightarrow 1 = \frac{4}{x}$$

$$x = 4$$

$$\text{Area of trapezium} = \frac{1}{2} [AB + DC] \times DE$$

$$= \frac{1}{2} [9 + 5] \times 4 = 28 \text{ cm}^2$$

27. (c) Original ratio of selected and unselected students

$$= 3x : 2x$$

Ratio when 100 students less had applied and 50 less ratio of selected and unselected = 7 : 4

According to the question,

$$\Rightarrow \frac{3x-100}{2x-50} = \frac{7}{4}$$

$$\Rightarrow 12x - 400 = 14x - 350$$

$$\Rightarrow 2x = 50$$

$$\Rightarrow x = 25$$

$$\begin{aligned} \Rightarrow \text{Total no. of students who applied} \\ &= 25 \times 7 + 100 \\ &= 275 + 100 = 375 \end{aligned}$$

28. (d) Prime factorization of 21, 24, 28 = 21

$$\Rightarrow 3 \times 7, 24 \Rightarrow 2^3 \times 3$$

$$28 \Rightarrow 2^2 \times 7$$

$$\text{L.C.M. of (21, 24, 28)} = 2^3 \times 3 \times 7$$

$$= 8 \times 3 \times 7 = 168$$

Now, Divide 2000, by 168 to find the first multiple which is greater than 2000 and 3000.

$$= \frac{2000}{168} = 11.90$$

$$\text{Smallest number} = 11 \approx 12 \times 168 = 2016$$

29. (a) Pattern of the series as shown below,

$$\begin{array}{ccccccc} 5 & 6 & 16 & 57 & 244 & 1245 & 7506 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \times 1+1^2 & \times 2+2^2 & \times 3+3^2 & \times 4+4^2 & \times 5+5^2 & \times 6+6^2 & \end{array}$$

30. (a) HCF of 435, 493 and 551 kg is

$$\text{HCF} = 493 - 435 = 52 = \boxed{29} \times 2$$

↓
H.C.F

Now,

Least no. of bags =

$$\frac{\text{Quantity of rice 1}}{\text{HCF}} + \frac{\text{Quantity of rice 2}}{\text{HCF}} + \frac{\text{Quantity of rice 3}}{\text{HCF}}$$

$$= \frac{435}{29} + \frac{493}{29} + \frac{551}{29}$$

$$= 15 + 17 + 19 = 51$$

31. (b) Let the number of boys = x and number of girls = y

According to the question,

Total number of boys and girls are 300

$$= x + y = 300 \quad \dots(i)$$

Each boy gets ₹2.40 and each girl gets ₹2.80

$$2.4x + 2.8y = 776 \quad \dots(ii)$$

solving both (i) and (ii), we get

$$x + y = 300$$

$$2.4x + 2.8y = 776$$

$$\Rightarrow 2.4x + 2.4y = 720$$

$$2.4x + 2.8y = 776$$

$$\begin{array}{r} - \\ - \\ \hline -0.4y = -56 \end{array}$$

$$y = \frac{56}{0.4} = 140$$

Hence, total number of girls are 140

32. (d) $\sqrt{4^{6 \times 2} \cdot 25^{7/2} \cdot 9Z^4}$

$$= \sqrt{4^{2(3 \times 2)} \cdot 5^{2(7/2)} \cdot 3^2 Z^4}$$

$$= 4^{3 \times 2} \cdot 5^{7/2} \cdot 3Z^4$$

33. (b) Percentage fall in imports in year 2021

$$= \frac{40 - 35}{40} \times 100 = \frac{5}{40} \times 100 = 12.5\%$$

Percentage fall in imports in year 2024

$$= \frac{48 - 45}{48} \times 100 = \frac{3}{48} \times 100 = 6.25\%$$

Percentage fall in imports in year 2023

$$= \frac{75 - 45}{75} \times 100 = \frac{30}{75} \times 100 = 40\%$$

Percentage fall in imports in year 2020

$$= \frac{45 - 40}{45} \times 100 = \frac{5}{45} \times 100 = 11.11\%$$

Hence, percentage fall in imports in year 2024 was minimum.

34. (d) Let the cost of orange, banana and apple be 'x', 'y' and 'z' respectively

According to the question,

$$2x + 3y + 4z = 15 \quad \dots(1)$$

$$3x + 2y + z = 10 \quad \dots(2)$$

On Adding (1) & (2)

$$5x + 5y + 5z = 25$$

$$\therefore x + y + z = 5 \quad \dots(3)$$

Then the cost of 3 oranges, 3 bananas and 3 apples is
on multiplying by 3 in equation (3) we get

$$\boxed{3x + 3y + 3z = ₹ 15}$$

35. (b) Alcohol in 1st glass = $\frac{2}{3}$; water in 1st glass = $\frac{1}{3}$

$$\text{Alcohol in 2nd glass} = \frac{1}{2}; \text{ water in 2nd glass} = \frac{1}{2}$$

$\therefore$ In 3rd glass,

$$\text{Alcohol} = \frac{2}{3} + \frac{1}{2} = \frac{7}{6};$$

$$\text{water} = \frac{1}{3} + \frac{1}{2} = \frac{5}{6}$$

$$\therefore \text{Required ratio} = \frac{7}{6} : \frac{5}{6} = 7 : 5$$