

AFCAT Memory Based Paper - 13 Feb 2022

- Q1** In a $\triangle ABC$ the $\angle A - \angle B = 36^\circ$ and the average measure of angle $\angle A$ and $\angle B$ is 74° . Find the measure of $\angle C$
(A) 48 (B) 40
(C) 42 (D) 32
- Q2** Ram buys a car but due to a sudden increase in the price of petrol by 25%, his budget is hampered. How much should he reduce his consumption of petrol so that the cost remains the same within his budget?
(A) 20% (B) 15%
(C) 13% (D) 27%
- Q3** A can fill a tank in 7 hours but due to a leakage it takes 8 hours to fill the tank. In what time leakage can empty the full tank?
(A) 50 hr (B) 56 hr
(C) 58 hr (D) 60 hr
- Q4** A can do a piece of work in 8 days, B can do the same work in 6 days while A, B and C together can do the same work in 3 days. In how many days C alone can complete the same work?
(A) 24 days (B) 30 days
(C) 18 days (D) 36 days
- Q5** Ram and Shyam ages 25 years and 35 years got a lottery of Rs. 3,00,000. They decided to divide the lottery money in the ratio of their age and then find the difference between the money they got
(A) Rs 52,000 (B) Rs 48,000
(C) Rs 50,000 (D) Rs 45,000
- Q6** Ram and Shyam started traveling from points A and B which is 710 km apart. Ram is traveling by train towards point B at a speed of 50 km/hr and Shyam is traveling by bus towards point A at a speed of 30 km/hr. Shyam started traveling 3 hours after Ram and they met at a point P after certain time. Find the distance between point P and point A
(A) 500 km (B) 425 km
(C) 400 km (D) 475 km
- Q7** Find the sum if the compound interest for 3 years at the rate of 5% per annum is Rs. 1261
(A) Rs 5000 (B) Rs 8000
(C) Rs 6000 (D) Rs 8500
- Q8** Aman lends a sum of money to Aman at the rate of 3% for the first 2 years, 5% for the next 3 years and 7% for next 1 year. If the total simple interest for the 6 years is Rs.840, then find the sum of money
(A) Rs 3000 (B) Rs 2500
(C) Rs 2000 (D) Rs 4500
- Q9** If the profit of a shopkeeper is increased by 15% but the sale is decreased by 5%. Find the net profit of the shopkeeper.
(A) 10% (B) 9.25%
(C) 8.75% (D) 11.25%
- Q10** A woman bought some amount of paneer, She used half of it on Monday, half of the remaining on Tuesday, and the process went on till Thursday. Find how much quantity she consumed in all from Monday to Thursday
(A) 91.25% (B) 90%
(C) 87% (D) 93.75%
- Q11** A person buys 50 kgs of apple at the rate of Rs. 55 per kg and he sells 25% of it in Rs. 59 per kg. Find in how much rupees per kg he sells the remaining apples to get a profit of 25% in the overall process
(A) Rs 72 /kg (B) Rs 70/kg
(C) Rs 68/kg (D) Rs 60/kg



Q12 At present Vikash is on the 10th floor and Khushbu is on the 35th floor. If the speed of lift going upward is 24 floor/min and going downward speed is 26 floor/min and both of them start at the same time. Find at which floor they will meet each other.

- (A) 24 (B) 20
(C) 21 (D) 22

Q13 There were 120 students who went for summer camp. 20 students joined them after some time, Due to which the cost of consumption increased by Rs. 80 per day and the average cost of each students decrease by Rs. 5. Find the initial consumption of each students

- (A) Rs 39 (B) Rs 41
(C) Rs 45 (D) Rs 49

Q14 The cost price of 10 shirts and 5 trousers together is Rs. 10,000, A shopkeeper sells shirts at a profit of 15% and trousers at a loss of 10% and his overall gain is Rs. 275. Find the cost price of a shirt.

- (A) Rs 510 (B) Rs 310
(C) Rs 290 (D) Rs 270

Q15 A goes from point P to Q with a certain speed. The speed on the onward journey was 20% less than the return journey. The total distance covered by him to and fro journey was 2000 km and he took 2 hours of halt for servicing before returning back from Q to P. Find the speed of onward journey if the total time taken by him in his journey was 42 hours

- (A) 45km/hr (B) 40km/hr
(C) 50km/hr (D) 55km/hr

Q16 In a college there are total 250 students. Average weight of boys is 50 and average weight of girls is 45. Also it is known that the overall average is 48. What is the number of boys in the college?

- (A) 125 (B) 170
(C) 150 (D) 200

Q17

The ratio of spirit and water in the two vessels is 5 : 1 and 3 : 7 respectively. In what ratio the liquid of both the vessels should be mixed such that a new mixture containing half spirit and half water is obtained?

- (A) 3 : 5 (B) 2 : 1
(C) 2 : 3 (D) 1 : 7

Q18 The value of $18 \div [26 - 25 - (15 - 5) \div 2] \text{ of } 12 + 2 - 2 \div 4 \times 16$ is:

- (A) $-\frac{23}{4}$
(B) $\frac{5}{4}$
(C) $\frac{27}{4}$
(D) None of the above

Q19 A sum becomes double in 4 years at compound interest, in how many years the sum becomes 8 times itself.

- (A) 8 years (B) 12 years
(C) 20 years (D) 15 years

Q20 There are three numbers N1, N2 and N3 and their sum of squares is 3325. N1 and N2 and N2 and N3 is in the ratio 3 : 2. Find the value of N1

- (A) 45 (B) 50
(C) 40 (D) 35



Answer Key

Q1 (D)

Q2 (A)

Q3 (B)

Q4 (A)

Q5 (C)

Q6 (A)

Q7 (B)

Q8 (A)

Q9 (B)

Q10 (D)

Q11 (A)

Q12 (D)

Q13 (A)

Q14 (A)

Q15 (A)

Q16 (C)

Q17 (A)

Q18 (A)

Q19 (B)

Q20 (A)

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Hints & Solutions

Q1 Text Solution:

Given

Average of angle A and B = 74

Calculation

We know that the sum of a triangle is = 180

$$\text{Average} = \frac{\text{Sum of Observation}}{\text{Number of Observation}}$$

So, Here Average of A and C = 74

So sum will be

$$\Rightarrow \text{Sum of } \angle A \text{ and } \angle B = 74 \times 2 = 148$$

..... (2 as Number of Observation)

Now We know sum of all three angle is = 180

$$\text{So, } \angle C = 180 - 148 = 32$$

Q2 Text Solution:

Given

Petrol price increased by 25%

Calculation

We know Expenditure
= $\text{price} \times \text{consumption}$

Now the price has increased by 25% then
Consumption will be decreased

Let the Initial price of petrol be Rs 100

$$\text{So, } \text{New price} = \text{Rs } 100 + 100 \times 25\% = \text{Rs } 125$$

Now, Let's say Car consumes 25 litre

$$\text{So, Initial Expenditure} = 100 \times 25 = \text{Rs } 2500$$

New Expenditure would be the same as initial
Expenditure so Consumption will be

$$= \frac{\text{Expenditure}}{\text{Price}} = \frac{2500}{125} = 20 \text{ litre}$$

So the Reduction is 25-20=5 liters

$$\text{Reduction} = \frac{5}{(125-100)} \times 100\% = 20\%$$

Q3 Text Solution:

Calculation

Let the leakage empty the tank in x hr

Time is taken by the tank to fill without leakage = 7 hr

Time is taken by the tank to fill with leakage = 8 hr

$$\text{Now, time is taken with leakage to fill tank in 1 hr} = \frac{1}{8}$$

time is taken without leakage to fill tank in 1 hr
= $\frac{1}{7}$

Then

$$\Rightarrow \frac{1}{8} = \frac{1}{7} - \frac{1}{x}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{7} - \frac{1}{8}$$

$$\Rightarrow \frac{1}{x} = \frac{8-7}{56} = \frac{1}{56}$$

So, the time taken by the leakage to empty the tank = 56 hr

Q4 Text Solution:

Given

A finish the work = 8 days

B finish the work = 6 days

A, B, and C together finish the same work = 3 days

Calculation

Let the total work done by A, B, C
= $\text{LCM}(8, 6, 3) = 24 \text{ units}$

So, the Efficiency of A = $\frac{24}{8} = 3 \text{ unit/day}$

Efficiency of B = $\frac{24}{6} = 4 \text{ unit/day}$

Efficiency of (A+B+C) = $\frac{24}{3} = 8 \text{ unit/days}$

So, the Efficiency of C = Eff of (A+B+C) - Eff of (A+B)
= $8 - (3 + 4) = 1 \text{ units/day}$

So, the time taken by C to complete the work = $\frac{24}{1} = 24 \text{ days}$

Q5 Text Solution:

Calculation

Ratio of Ram and Shyam ages
= $25 : 35 = 5 : 7$

They got the lottery of = Rs 3,00,000

So the share of Ram = $3,00,000 \times \frac{5}{12} = 1,25,000$

Share of Shyam = $3,00,000 \times \frac{7}{12} = 1,75,000$

So the difference
= $1,75,000 - 1,25,000 = 50,000$

Q6 Text Solution:

Calculation

The distance between A to B is 710 km

They meet at point P after a certain time

Let the traveling time of A be x hr



Then, the traveling time of B be $= (x - 3)hr$

Distance covered by Ram from A to P
 $= 50 \times x = 50x \text{ km}$

Distance covered by Shyam from B to P =
 $30 \times (x - 3) = (30x - 90) \text{ km}$

Now Total distance covered by Ram and Shyam is
 710 km

$$\Rightarrow AP + BP = 710$$

$$\Rightarrow 50x + (30x - 90) = 710$$

$$\Rightarrow 80x = 800$$

$$\Rightarrow x = 10$$

$$\text{Distance between A and P} = 50 \times 10 = 500 \text{ km}$$

Q7 Text Solution:

Calculation

$$CI = P\left(1 + \frac{r}{100}\right)^n$$

$$CI = \text{Rs } 1240$$

$$\text{Rate} = 5\%$$

$$\text{Time} = 3 \text{ years}$$

Putting the Values given in the formula

$$\Rightarrow 1261 = P\left(1 + \frac{5}{100}\right)^3$$

$$\Rightarrow 1261 = P\left(\frac{21}{20}\right)^3 \Rightarrow P = 1261 \times \frac{20}{21}$$

$$\times \frac{20}{21} \times \frac{20}{21}$$

$$\Rightarrow P = 8000$$

Q8 Text Solution:

Formula Used

$$SI = \frac{P \times R \times T}{100}$$

Calculation

Let the sum of money be P

$$\text{Then, First 2 years of SI} = \frac{(P \times 3 \times 2)}{100} = \frac{6P}{100}$$

$$\text{Next 3 year of SI} = \frac{(P \times 5 \times 3)}{100} = \frac{15P}{100}$$

$$\text{Next 1 year of SI} = \frac{(P \times 7 \times 1)}{100} = \frac{7P}{100}$$

$$\text{Total 6 year of SI} = \text{Rs } 840$$

$$\Rightarrow \frac{6P}{100} + \frac{15P}{100} + \frac{7P}{100} = 840$$

$$\Rightarrow \frac{6P + 15P + 7P}{100} = 840$$

$$\Rightarrow 28P = 84000$$

$$\Rightarrow P = 3000$$

Q9 Text Solution:

Calculation

Profit increased by shopkeeper 15%

sale is decreased by 5%

Net profit will be calculated if profit and loss happen simultaneously

Let's say profit is P% and loss is L%

$$\text{Net profit} = (P - L) - \frac{(P \times L)}{100}$$

Putting the value in the formula

$$\Rightarrow (15 - 5) - \frac{15 \times 5}{100} = 10 - \frac{75}{100} = 10 - \frac{3}{4}$$

$$= 9.25\%$$

Q10 Text Solution:

Calculation

Let the paneer amount be x kg

Then Paneer consumed on Monday = $\frac{x}{2}$

Paneer consumed on Tuesday =

$$\frac{x}{2} - \frac{\frac{x}{2}}{2} = \frac{x}{2} - \frac{x}{4} = \frac{x}{4}$$

Paneer consumed on Wednesday =

$$\frac{x}{4} - \frac{\frac{x}{4}}{2} = \frac{x}{4} - \frac{x}{8} = \frac{x}{8}$$

Paneer consumed on Thursday =

$$\frac{x}{8} - \frac{\frac{x}{8}}{2} = \frac{x}{8} - \frac{x}{16} = \frac{x}{16}$$

So the total amount of paneer consumed from Monday to Thursday

$$\Rightarrow \frac{x}{2} + \frac{x}{4} + \frac{x}{8} + \frac{x}{16} = \frac{15x}{16}$$

So we have to calculate

$$\frac{15x}{16} \text{ is what percent of } x$$

$$\Rightarrow \frac{\frac{15x}{16}}{x} \times 100\% = \frac{1500x}{16x} = 93.75\%$$

Q11 Text Solution:

Calculation

The purchase cost of 50 kg apple

$$= 50 \times 55 = \text{Rs } 2750$$

He sells 25% of apples at Rs 59/kg

$$\text{So, 25% of 50 kg apple} = \frac{(50 \times 25)}{100} = 12.5 \text{ kg}$$

Selling price of 12.5 kgs apple

$$= 12.5 \times 59 = \text{Rs } 737.50$$

Remaining quantity of apple

$$= 50 - 12.5 = 37.5 \text{ kg}$$

Total Overall Profit = 25%

Overall money to be earned through sale

$$\frac{125}{100} \times 2750 = \text{Rs } 3437.50$$

Money to be earned through sale of remaining

$$37.5 \text{ kg} = 3437.50 - 737.50 = \text{Rs } 2700$$



$$\text{SP of Remaining apple} = \frac{2700}{37.5} = \text{Rs } 72/\text{kg}$$

Q12 Text Solution:**Calculation**

Speed going upward = 24 floor/min

Speed going downward = 26 floor/min

Now Vikas is moving upward and Khusbu is moving downward

$$\text{Time} = \frac{\text{Distance between them}}{\text{Relative speed}} = \frac{(35-10)}{(24+26)} = \frac{25}{50} = \frac{1}{2} \text{ min}$$

Now in 0.5 min floor covered by khusboo = $26 \times \frac{1}{2} = 13 \text{ floor}$

So, they will meet at $35 - 13 = 22\text{nd floor}$

Q13 Text Solution:**Calculation**

Let the average cost of each student be x

After joined 20 student the average cost of each student = $x-5$

Now the Original number of student = 120

Cost of consumption increased per day = Rs 80

So the equation will be

$$\Rightarrow 120x + 80 = 140(x - 5)$$

$$\Rightarrow 20x = 780$$

$$\Rightarrow x = 39$$

Q14 Text Solution:**Calculation**

Let the CP of shirt be x and trouser be y

$$\text{then } 10x + 5y = \text{Rs } 10,000 \dots\dots\dots (1)$$

Shopkeeper sells shirts at profit of 15% and trouser at 10% loss

Then Overall gain

$$\Rightarrow 10x \text{ of } 15\% - 5y \text{ of } 10\% = \text{Rs } 275$$

$$\Rightarrow 10x \times \left(\frac{15}{100}\right) - 5y \times \left(\frac{10}{100}\right) = \text{Rs } 275$$

$$\Rightarrow 15x - 5y = \text{Rs } 2750 \dots\dots$$

$$\dots\dots\dots (2)$$

On adding eqn 1 and 2

$$\Rightarrow 25x = 12750$$

$$\Rightarrow x = 510$$

Q15 Text Solution:**Calculation**

Let the onward journey speed and return journey speed be x and y

According to the question

$$x = 80\% \text{ of } y$$

$$\Rightarrow x = \frac{4}{5} \times y$$

$$\Rightarrow \frac{x}{y} = \frac{4}{5}$$

Let the ratio be a

$$\text{So, } x = 4a, y = 5a$$

$$\text{Actual time of journey} = 42 - 2 = 40 \text{ hrs}$$

$$\text{Average} = \frac{2000}{40} = 50 \text{ km/hr}$$

$$\text{So, } \frac{(x+y)}{2} = 50$$

$$\Rightarrow x + y = 100$$

$$\Rightarrow 4a + 5a = 100$$

$$\Rightarrow 9a = 100$$

$$\Rightarrow a = \frac{100}{9}$$

$$\text{So } x = 4a = \frac{400}{9} = 45 \text{ km/hr}$$

Q16 Text Solution:**Calculation**

Total students = 250

The average weight of boys = 50

The average weight of girls = 45

Overall Average = 48

Now by using Allegation

So the ratio of boys : girls would be = $48 - 45 : 50 - 48$

$$= 3 : 2$$

$$\text{so the number of boys} = \frac{3}{5} \times 250 = 150$$

Q17 Text Solution:**Calculation**

Ratio of spirit and water in vessel 1 = 5 : 1

Ratio of spirit and water in vessel 2 = 3 : 7

now we know two mixtures are mixed let say x be 1 mixture and y be 2nd mixture

Total quantity of resultant mixture = $(x+y)$

$$\text{Quantity of spirit in 1 vessel} = \frac{5x}{6}$$

$$\text{Quantity of spirit in vessel 2} = \frac{3y}{10}$$



$$\frac{5x}{6} + \frac{3y}{2} = \frac{(x+y)}{2}$$

$$\Rightarrow 25x + 9y = 15 \times (x + y)$$

$$\Rightarrow 25x + 9y = 15x + 15y$$

$$\Rightarrow 10x = 6y$$

$$\Rightarrow \frac{x}{y} = \frac{3}{5}$$

Q18 Text Solution:**Calculation**

$$\Rightarrow 18 \div [26 - 25 - (15 - 5) \div 2] \text{ of } 12 + 2 - 2 \div 4 \times 16$$

$$\Rightarrow 18 \div [26 - 25 - (10) \div 2] \text{ of } 12 + 2 - 2 \div 4 \times 16$$

$$\Rightarrow 18 \div [26 - 20] \text{ of } 12 + 2 - 2 \div 4 \times 16$$

$$\Rightarrow 18 \div 6 \text{ of } 12 + 2 - 2 \div 4 \times 16$$

$$\Rightarrow 18 \div 72 + 2 - 2 \div 4 \times 16$$

$$\Rightarrow \frac{1}{4} + 2 - \frac{1}{2} \times 16$$

$$\Rightarrow \frac{-23}{4}$$

Q19 Text Solution:**Calculation**

Sum become double at CI = 4 years

Let the sum be p

$$\Rightarrow 2p = p \left(1 + \frac{r}{100}\right)^4 \dots\dots\dots(1)$$

For 8 times let time = n years

$$\Rightarrow 8p = p \left(1 + \frac{r}{100}\right)^n \dots\dots\dots(2)$$

taking the value of $p \left(1 + \frac{r}{100}\right)$ and equate

From 1 and 2nd we get

$$\Rightarrow (2)^{\frac{1}{4}} = (8)^{\frac{1}{n}} \Rightarrow 2^n = 8^4$$

$$\Rightarrow 2^n = 2^{12}$$

$$\Rightarrow n = 12 \text{ years}$$

Q20 Text Solution:**Calculation**

$$\Rightarrow N_1 : N_2 = 3 : 2$$

$$\Rightarrow N_2 : N_3 = 3 : 2$$

The sum of squares of all three = 3325

$$N_1 : N_2 : N_3 = 3 \times 3 : 2 \times 3 : 2 \times 2 = 9 : 6 : 4$$

If the ratio is x then,

$$\Rightarrow (9x)^2 + (6x)^2 + (4x)^2 = 3325 \Rightarrow 81x^2$$

$$+ 36x^2 + 16x^2 = 3325$$

$$\Rightarrow 133x^2 = 3325$$

On solving we get

$$\Rightarrow x = 5$$

So N1 will be $9 \times 5 = 45$





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