

# AFCAT Memory Based Paper - 16 Feb 2024 (Shift 1)

## Numerical Aptitude

- Q1** Train crosses the 153 m long platform in 45 sec if the train length is 747 m then what is the speed of the train ?  
 (A) 80 km/hr (B) 55 km/hr  
 (C) 75 km/hr (D) 90 km/hr
- Q2** What is the largest 4 digit number divisible by 88?  
 (A) 9944 (B) 9000  
 (C) 8488 (D) 9999
- Q3** A person sold an article for ₹ 3,600 and got a profit of 20 %. Had he sold the article for ₹ 3,150, how much profit would he have got?  
 (A) 10% (B) 5%  
 (C) 7% (D) 7.5%
- Q4** A and B can do a piece of work in 20 hours. B and C can do it in 25 hours, while A and C take 15 hours to complete the work. B independently can complete the work in  
 (A) 66.66 days (B) 70 days  
 (C) 60 days (D) 45 days
- Q5** Which number should be subtracted from 23, 30, 57 and 78 so that remaining numbers are in proportion ?  
 (A) 9 (B) 6  
 (C) 7 (D) 8
- Q6** If the person got Rs 6800 amount by bank closing his bank account after 3 years at the rate of 12% will be the initial sum of amount?  
 (A) 15000 (B) 14550  
 (C) 16000 (D) 13000
- Q7** A Library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is  
 (A) 250 (B) 285  
 (C) 275 (D) 265
- Q8** Three pipes, D, E and F, can fill a tank in 6min, 8min and 12min, respectively. All the pipes are opened simultaneously, and then pipes D and E are closed 3 minutes before tank is full. In how much time will the tank be full?  
 (A) 4 min (B) 11 min  
 (C) 7 min (D) 5 min
- Q9** The area of circle formed by the rope of length 22 cm will be ?  
 (A) 154 (B) 156  
 (C) 160 (D) 146
- Q10** X sells to Y with a profit of 10%. Y sales to Z with a profit of 40% and z sales to A with a lose of 10% and Y got 80 more profit than X what will be the CP of A?  
 (A) 144 (B) 150  
 (C) 154 (D) 156.5
- Q11** From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being Queen?  
 (A)  $\frac{1}{221}$  (B)  $\frac{1}{225}$   
 (C)  $\frac{2}{13}$  (D)  $\frac{1}{13}$
- Q12** What will come in the place of the question mark ? in the following question?  
 $150 \div 3 \times 12 - (300 \div 6 \times 12) + 1 = ?$   
 (A) 2 (B) 1  
 (C) 0 (D) -1
- Q13** If a person borrowed 12000 and returned 1st year 4000 and 2nd year 9240 CI. then the rate of interest will be?  
 (A) 15% (B) 16%  
 (C) 14% (D) 17%



**Q14** The ratio of milk and sugar in the container is  $2 : 3$  when  $20L$  of the mixture is taken out & is replaced by the sugar the ratio becomes  $3 : 7$ . Then the total quantity of the mixture in the container is ?

- (A) 60 (B) 80  
(C) 70 (D) 90

**Q15** Eight years ago, Ajay's age was  $\frac{4}{3}$  times that of Vijay. Eight years hence, Ajay's age will be  $\frac{6}{5}$  times that of Vijay. What is the present age of Ajay ?

- (A) 40 years (B) 41 years  
(C) 42 years (D) 43 years

**Q16** A can do work in 20 days B can do work in 25 days and C can do it in 50 days. they work for 2 days then C left after again working for 2 days B left. Then how much percentage of work will be done by A?

- (A) 60% (B) 65.5%  
(C) 70% (D) 73%

**Q17** What will be the value of the expression?

$$11122 \div 134 + 26\% \text{ of } 471$$

- (A) 207.86 (B) 205.46  
(C) 204.34 (D) 203.52

**Q18** A man who is running at the speed of  $10\text{km/hr}$  in the opposite direction of the train. The train at the speed of  $60\text{km/hr}$  crosses the man in 36 seconds. What is the length of the train?

- (A) 500m (B) 900m  
(C) 450m (D) 700m

**Q19** A candidate scores 25% and fails by 32 marks, while another candidate who scores 40% marks, gets 28 marks more than the minimum required marks to pass the examination. How many marks did a candidate score if he scored 72% marks?

- (A) 288 (B) 275  
(C) 250 (D) 300

**Q20** In a mixture of 160 liters, the ratio of milk and water  $3:1$ . If this ratio is to be  $1:3$ , then find the

quantity of water to be further added.

- (A) 40 liters (B) 320 liters  
(C) 50 liters (D) 100 liters



## Answer Key

Q1 (A)  
Q2 (A)  
Q3 (B)  
Q4 (A)  
Q5 (B)  
Q6 (A)  
Q7 (B)  
Q8 (D)  
Q9 (A)  
Q10 (B)

Q11 (A)  
Q12 (B)  
Q13 (A)  
Q14 (B)  
Q15 (A)  
Q16 (C)  
Q17 (B)  
Q18 (D)  
Q19 (A)  
Q20 (B)



## Hints & Solutions

### Q5 Text Solution:

**Given:-**

The numbers are 23, 30, 57 and 78

**Calculation:-**

Assume that  $x$  be subtracted from each term  
 $23 - x$ ,  $30 - x$ ,  $57 - x$  and  $78 - x$  are proportional

It can be written as

$$23 - x : 30 - x :: 57 - x : 78 - x$$

$$\Rightarrow \frac{(23-x)}{(30-x)} = \frac{(57-x)}{(78-x)}$$

$$\Rightarrow (23 - x)(78 - x) = (30 - x)(57 - x)$$

$$\Rightarrow 1794 - 23x - 78x + x^2 = 1710 - 30x - 57x + x^2$$

$$\Rightarrow x^2 - 101 + 1794 - x^2 + 87x - 1710$$

So, we get

$$\Rightarrow -14x + 84 = 0$$

$$\Rightarrow 14x = 84$$

$$\Rightarrow x = \frac{84}{14} = 6$$

Therefore, 6 is the number to be subtracted from each of the numbers

Hence, the correct answer is **Option (b)** i.e., 6

### Q8 Text Solution:

Three pipes, D, E and F, can fill a tank in 6 min, 8 min and 12 min respectively.

Total capacity of the tank  
 $= \text{LCM of } 6, 8 \text{ and } 12 = 24 \text{ unit.}$

$$\text{Efficiency of pipe D} = \frac{\text{total Capacity}}{\text{time taken by D}} = \frac{24}{6} = 4$$

$$\text{Efficiency of pipe E} = \frac{24}{8} = 3$$

$$\text{Efficiency of pipe F} = \frac{24}{12} = 2$$

Let the tank be filled in  $x$  min.

According to the question,

$$(4 + 3) \times (x - 3) + 2 \times x = 24$$

$$\text{or, } 7x - 21 + 2x = 24$$

$$\text{or, } 9x = 45 \text{ or, } x = 5 \text{ min}$$

The tank will be filled in 5 min.

### Q12 Text Solution:

**Calculations:-**

$$150 \div 3 \times 12 - (300 \div 6 \times 12) + 1 = ?$$

$$50 \times 12 - (50 \times 12) + 1 = ?$$

$$? = 1$$

### Q14 Text Solution:

**Given:-**

$$\text{Milk : Sugar} = 2 : 3$$

When 20 L of the mixture is taken out and replaced with sugar, the ratio becomes 3 : 7

**Calculation:-**

Let milk be  $2x$  and sugar  $3x$

When 20L of the mixture is taken out the ratio remains the same

According to the question

$$\frac{2x}{3x+20} = \frac{3}{7}$$

$$\Rightarrow 2x \times 7 = (3x + 20) \times 3$$

$$\Rightarrow 14x = 9x + 60$$

$$\Rightarrow x = 12$$

Total

mixture

$$= 2x + (3x + 20) = 5x + 20 = 80L$$

Hence, the correct answer is **Option (b)** i.e., 80

### Q15 Text Solution:

**Concept:-**

We are using problems on age concept to find the problem.

**Formula Used:-**

If the current age is  $x$ , then  $n$  times the age is  $nx$ .

If the current age is  $x$ , then Age  $n$  years later hence  $= x + n$ .

If the current age is  $x$ , then Age  $n$  years ago  $= x - n$ .

The ages in a ratio  $a : b$  will be  $ax$  and  $bx$ .

**Explanation:-**

Let the present ages of Ajay and Vijay be 'A' and 'V' years.

According to question, we have

$$A - 8 = \frac{4}{3} (V - 8)$$

$$\text{and } A + 8 = \frac{6}{5} (V + 8)$$

$$\frac{3}{4}(A - 8) = V - 8$$

$$\text{and } \frac{5}{6}(A + 8) = V + 8$$

Then, we get:



$$= \frac{3}{4} (A - 8) + 8 \dots\dots(1)$$

$$= \frac{5}{6} (A + 8) - 8 \dots\dots(2)$$

From (1) and (2), we get:

$$\frac{3}{4} A - 6 + 8 = \frac{5}{6} A + \frac{20}{3} - 8$$

$$10 - \frac{20}{3} = \frac{10}{12} A - \frac{9}{12} A$$

$$\frac{10}{3} = \frac{A}{12}$$

A = 40 years

**Q17 Text Solution:**

**Given**

$$11122 \div 134 + 26\% \text{ of } 471$$

**Concept Used**

Sum of Digits

**Solution**

$$11122 \div 134 + 26\% \text{ of } 471$$

we will take the sum of the digits here

Sum of digits(11122)÷Sum of digits(134)+Sum of digits(26) × sum of digit(471)

$$\Rightarrow 7 \div 8 + 8 \times 3$$

$$(\text{for the sum of } \frac{7}{8} = \frac{7 \times 8}{8 \times 8} = \frac{56}{64} = 2)$$

$$\Rightarrow 2 + 6$$

$$\Rightarrow 8$$

So the answer will be whose digits sum would be 8

**Q18 Text Solution:**

**Given:-**

$$\text{Speed of man} = 10 \text{ km/hr}$$

$$\text{Speed of Train} = 60 \text{ km/hr}$$

The train crosses the man in 36 seconds

**Formula Used:-**

If speed of the two trains be x km/hr and y km/hr respectively, if x>y

$$\text{Relative speed, if opposite directions} = (x + y) \text{ km/hr}$$

$$\text{Relative Speed, if same direction} = (x - y) \text{ km/hr}$$

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

$$1 \text{ km/hr} = \frac{5}{18} \text{ m/s}$$

**Calculation:-**

Relative Speed of train and man, if both running opposite directions =  $(60 + 10) = 70 \text{ km/hr}$

Let length of train be x m

According to the question

$$70 \times \frac{5}{18} = \frac{x}{36}$$

$$x = 70 \times \frac{5}{18} \times 36 = 700 \text{ m}$$

Length of train is 700m

**Q19 Text Solution:**

A candidate scores 25% and fails by 32 marks

Let the maximum marks be 100x.

Minimum required number to pass for 1st candidate = 25% of 100x + 32

$$= 25x + 32$$

Another candidate who scores 40% marks, gets 28 marks more than the minimum required marks to pass the examination.

Minimum required number to pass for 2nd candidate

$$= 40\% \text{ of } 100x - 28 = 40x - 28$$

A.T.Q.

$$25x + 32 = 40x - 28$$

$$15x = 60,$$

$$x = 4$$

$$\text{Maximum mark} = 100x = 400$$

$$\text{Marks of candidate who score 72\% marks} = 72\% \text{ of } 400 = 288$$

**Q20 Text Solution:**

**Given:-**

$$\text{Mixture} = 160 \text{ liters}$$

$$\text{Ratio of Milk and Water} = 3 : 1$$

**Calculation:**

$$\text{Quantity of Milk} = 160 \times \frac{3}{4} = 120 \text{ litres}$$

$$\text{Quantity of Water} = 160 - 120 = 40 \text{ litres}$$

$$\text{New Ratio of Milk and Water} = 1 : 3$$

Let quantity of water added in x litres

$$\text{So, } \frac{120}{40+x} = \frac{1}{3} \Rightarrow x = 320$$





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