WIPRO NLTH 19 October 2019 Shift Aptitude and Reasoning paper

Question 1: The number 456*85 is completely divisible by 3. Smallest whole digit number in place of * can be :

      a) 2   **b) 5**

      c) 3   **d) 0**

Solution: Answer is option (a) 2

To check the number whether it is divisible by 3 add the digits of the number and check whether the sum is divisible by 3 or not

If the sum is divisible by 3 then the number is exactly divisible by 3 and if the sum is not divisible by 3 and the number is not divisible by 3

The given number is 4+5+6+8+5+* =28 + *

The * must be 2 so the resultant sum will be 30 then and it is divisible by 3

 So the answer is 2

Question 2: Simplify $(144^{-3/2})^{-1/6}$

      a) $3\sqrt{3}$ **b)** $2\sqrt{5}$

      c) $5\sqrt{3}$ **d)** $2\sqrt{3}$

Solution: Answer is option (d) $2\sqrt{3}$

As we know that 144 is the square of 12 so we write 144 in the form of exponent

$= ((12^2)^{-3/2})^{-1/6}$

Now the exponents will be multiplied

$=(12^{-3})^{-1/6}$

$= (12)^{3/6}$

$= (12)^{1/2}$

$$= 2\sqrt{3}$$

Question 3: The number of 5- digit odd numbers that can be made from number 12345 are :

      a) **72 ways**   b) **140 ways**

      c) **130 ways**   d) **150 ways**

Solution: Answer is option (a) 72 ways

Solution:

We have to form 5 digit number ___ ____ ____ _____

Among digits 1,2,3,4, 5 in total we have 5 digits and there are three odd numbers.

When we place either of them (1,3,5) at the unit digit only then we are going to form an odd number irrespective of the numbers placed at the other positions.

The first place can be filled in 3 ways and for second place there are 4 digits left so 4 ways and for third place there are 3 digits left so 3 ways and for fourth place there are 2 digits left so 2 ways and for fifth place there is 1 digit left so 1 way so the required cases are

$$= 1 \times 2 \times 3 \times 4 \times 3 = 72 \text{ ways}$$

Question 4: What is the values for X and Y in 72X23Y for it to be perfectly divisible by 88?

      a) **7,2**   b) **1,2**

      b) **2,4**   d) **None**

Solution: Answer is option (a) 7,2

To be divisible by 88 first divide the divisor into relative prime numbers and those are 11,8

Now we have to apply the divisibility rule for 8 and 11

For 8 the last three digits of any number must be divisible by 8

 So take three digits; 23Y

 If we divide this by 8 then Y should 2 so now we have to find the value for x

The divisibility rule for 11 is the take the digits at the odd place and make a sum of it

7+x+3= 10+x

And now the digits which are at even place

2+2+y= 2+2+2=6

 Now we have to subtract their respective sums and if the difference is either 0 or the multiple of 11 then the number is divisible by 11 and it is clearly given the number is divisible by 11

 So 10 +x – 6 = 4 +x

Now it can not be zero as we can not take negative value so try to make the sum a multiple of 11 i.e. 11 in this case

So here the required number is 7

 X= 7

Y =2

Question 5: Jagdish can build a wall in 10 days. Narender can build same wall in 12 days while Sumit takes 15 days to do the same job. Which two of them should be employed to finish the job in 6 days?

    a) Jagdish and Narender   **b) Narender and Sumit**

    c) Jagdish and Sumit   **d) None**

Solution: Answer is option (C) Jagdish and Sumit

      Time taken byJagdish to Build the wall = 10 days

      Time taken by Narender to Build the wall = 12 days

Time taken by Sumit to Build the wall = 15 days

Take the LCM of all three numbers to divide the whole work into no of units of work.

LCM of 10,12,15 = 60

Efficiency of Jagdish= $\dfrac{60}{10}$ = 6 units of work is done by Jagdish in a day

Efficiency of Narender= $\dfrac{60}{12}$ = 5 units of work is done by Narender in a day

Efficiency of Sumit= $\dfrac{60}{15}$ = 4 units of work is done by Sumit in a day

The total units of work done by Jagdish and narender in a day = 6+5= 11 units

The total units of work done by Jagdish and Sumit in a day = 6+4= 10 units

The total units of work done by Sumit and narender in a day = 4+5= 9 units

And we have to complete 60 units in 6 days that means each day we have to complete 10 units

And 10 units are completed by Jagdish and Sumit

Question 6: If we permute 5 letters of the word 'lemon' in 5! Ways. In how many words vowels do not come together?

        a) 72 ways   **b) 140 ways**

        c) 130 ways   **d) 150 ways**

Solution: Answer is option (a) 72 ways

Solution:

We have to form 5 alphabet word ___ ____ ____ ____ ____

That means there are 120 ways as is given in the question because it is considering no repetition at all.

Now the question is how many words are there in which no vowels don't come together

We take a different approach here instead of finding the no of words having no vowels together we will find the no of words which will have the vowels together actually and then subtract this number from the total no of words possible.

Now go through the word "LEMON"

In this word, there are 2 vowels (E and O)

And lets combine them to form a single set (EO) and other alphabets are L M N are being used as individuals

Now there are 4 alphabets to be considered ((EO) LMN) so the no of ways possible is 4! = 24 but at the same time this set of two alphabets also can be arranged in 2! Ways

So the resultant no of words having all vowels together 4! × 2! = 48 words

 Total words possible 5! =120 words

No of words left having no vowels together 120-48 = 72 words

Question 7: If from a deck of 52 cards, 4 cards are to be selected and 1 card of it should be spade and another should be heart, in how many ways can these cards be selected?

    a) $13 \times {}^{50}_{2}C$
    b) ${}^{50}_{2}C$

    c) $13^2 \times {}^{50}_{2}C$
    d) none

Solution: Answer is option (c) $13^2 \times {}^{50}_{2}C$

There are total 52 cards and we have to select 4 cards among them, so here the concept of combination will work so the solution will be

$$(\text{as} {}^{n}_{r}C = \frac{n!}{r!(n-r)!})$$ and ! denotes the factorial of the number.

In total there are 52 cards

There are 13 cards of spade

There are 13 cards of heart

And we have to select 1 card from each of them so the possible ways are

$$^{13}_{1}C \times ^{13}_{1}C$$

On applying the formula above said

$$= 13 \times 13$$

$$= 13^2$$

And now two cards are left to be selected among the rest 50 cards again the formula for combination

$$= ^{50}_{2}C$$

Combining the conditions to get all the four cards as given conditions

$$= 13^2 \times ^{50}_{2}C$$

Question 8: When 2^{35} is divided by 5 , the remainder is :

        a) 3   **b) 1**

        c) 2   **d) none**

Solution: Answer is option (a) 3

Here the concept of unit digit will come

We will find the unit digit of the number 2^{35} and then divide it by 5 and the remainder will be same for the entire number.

To get the unit digit number we should know the cyclicity of the number 2 and the cyclicity for 2 is 4

Now divide the power with 4 and that is 35/4 and the remainder is 3

Now we will take the number 2^{35} as 2^3

And the value for this is 8 and when it is divided by 5; the remainder is 3

Question 9: A started business with Rs. 270000 and was joined by B three months afterwards. How much money did B invest if the profit share of the A at the end of the year was three-fifth of the total profit?

    a)   300000   b) 175000

    c)   240000   d) none

Solution: Answer is option (c) 240000/-

B is investing after 3 months of A

That means if A has invested for 12 months B has invested for 9 months only

Money invested by A = Rs. 270000/-

Money invested by B = Rs. x (suppose)

Let the profit be P

As per the given conditions:

$12 \times 270000 = \frac{3}{5} \times P$

Similarly,

$9 \times x = \frac{2}{5} \times P$

Now derive the equations for P in both conditions and then equate them we get

$12 \times 270000 \times \frac{5}{3} = 9 \times x \times \frac{5}{2}$

Solve the above equation;

And the value for x = Rs. 240000/-

Question 10: The unit digit of 3^{34} is

a) 3   b) 1
b) 9   d) none

Solution: Answer is option (c) 9

Here the concept of unit digit will come

We will find the unit digit of the number 3^{34}

To get the unit digit number we should know the cyclicity of the number 3 and the cyclicity for 3 is 4.

Now divide the power with 4 and that is 34/4 and the remainder is 2

Now we will take the number 3^{34} as 3^2

And the value for this is 9 and the remainder is 3

Question 11: How many litres of a 90% of concentrated acid needs to be mixed with a 75% solution of concentrated acid to get a 30 litre solution of 78% concentrated acid?

a) 3   b) 6
b) 9   d) none

Solution: Answer is option (b) 6

Let the amount of liquid having concentration 90% = x litre

Then the amount of liquid having concentration 75% = 30-x litre

And we need a 30 litre solution having 78% concentration.

As per the given conditions :

$$= x \times \frac{90}{100} + \frac{75}{100} \times (30 - x) = 30 \times \frac{78}{100}$$

$$= x \times \frac{90}{100} + \frac{75}{100} \times 30 - \frac{75}{100} \times x = 30 \times \frac{78}{100}$$

$$= \frac{15}{100} \times x = 30 \times \frac{78}{100} - \frac{75}{100} \times 30$$

$$\Rightarrow X = 6 \text{ litre}$$

Question 12: Population of a village is 8000. The number of males and female increased by 6% and 10% respectively and consequently the population of the village becomes 8600. What was the number of females in the village?

      a) **5000**   b) **6000**

      b) **3000**   d) **none**

Solution: Answer is option (a) 5000

Let the no of males $= x$

And the no of females $= y$

As per given condition $x + y = 8000$ =➜ equation(1)

Now increase in no of males $= \frac{106}{100} \times x$

Now increase in no of females $= \frac{110}{100} \times y$

Now after the increase the net population $= 8600$

In equation form

$$\frac{106}{100} \times x + \frac{110}{100} \times y = 8600 \quad =\!\!\blacktriangleright \text{equation(2)}$$

When we solve the equations (1) and (2)

Y= 5000 (no of females)

And x= 3000 (no of males)

Question 13: Atul bought a machine for 450000 and sold it to Irfan at a profit. Irfan later sold the machine to Danish at a loss of 10% for Rs. 495000. The profit earned by Atul is

    a) **22.22%**   b) **25.2%**

    c) **35.3%**   d) **20.14 %**

Solution: Answer is option (a) 22.22 %

Cost Price of Atul = Rs. 450000/-

 And then he sold it at a profit of x %

 Then the selling price for Atul = Cost Price for Irfan

$$450000 \times \frac{100+x}{100}$$

Now Irfan sold it at a loss of 10 %

Then Selling price for Irfan = Cost price of Danish = Rs. 495000/-

$$450000 \times \frac{100+x}{100} \times \frac{90}{100} = 495000$$

Now solve for x and the answer is 22.22% gain

Question 14: A rectangle's length is 4 times its breadth it has an area of 2500 square yards what is the length of the rectangle?

a) **190 yards**   b)**210 yards**

b) **200 yards**   d) **100 yards**

Solution: Answer is option (d) 100 yards

Let the breadth of the rectangle = x yards

And the length of the rectangle = 4x yards

As per the formula =>

Area = length × breadth

Area = 2500 square yards

So substitute the values in the formula

$2500 = 4x \times x$

$2500 = 4x^2$

$625 = x^2$

$25 = x$

Now the length of rectangle = 100 yards

Question 15: Find the remainder when (8888……. Repeat 63 times) is divided by 9.

a) **3**   b) **0**

b) **9**   d) **none**

Solution: Answer is option (b) 0

First check the divisibility of 9

To check the number whether it is divisible by 9 add the digits of the number and check whether the sum is divisible by 9 or not

If the sum is divisible by 9 then the number is exactly divisible by 9 and if the sum is not divisible by 9 and the number is not divisible by 9

$$= \frac{(888888..........repeat\ 63\ times)}{9}$$

Take 8 as common

$$= \frac{8(111111..........repeat\ 63\ times)}{9}$$

Now the bracket sums to 63

And the net sum is

$$= \frac{8 \times 63}{9}$$

$$= \frac{504}{9}$$

It is completely divisible by 9 so the remainder is 0

Question 16: What will be the value of A and B: A8 + 96 = 1AB

a) 3,4	**b) 0,1**
b) 9,3	**d) none**

Solution: Answer is option (d) None

There is no values satisfying the equation as the data provided is inconsistent because B can take 4 but the

Equation for A will be $10+A = A$

So none.

Question 17: A can finish a job in 12 hours, B in 14 hours. A and B work alternatively starting with A starting with A. If A earns Rs. 50 per hour how much foes A earn through this job?

a) Rs. 400   b) Rs. 450

c) Rs 350   d) None

Solution: Answer is option (C) Rs. 350/-

Time taken by A to do the work = 12 hours

Time taken by B to do the work = 14 hours

Take the LCM of both numbers to divide the whole work into no of units of work.

LCM of 12,14 = 84

Efficiency of A= $\dfrac{84}{12} = 7$ units of work is done by A in an hour

Efficiency of B= $\dfrac{84}{14} = 6$ units of work is done by B in an hour

The total units of work done by A and B in two hours = 7+6= 13units

As both of them work alternatively so in first hour A will work and in another next hour B will work.

And we have to complete 84 units

In first 2 hours no of units completed = 13

In 4 hours no of units completed = 26

In 6 hours no of units completed = 39

In 8 hours no of units completed = 52

In 10 hours no of units completed = 65

In 12 hours no of units completed = 78

In 13th hour no of units completed = 6

In total A has worked 7 hours

Earning per day by A= Rs 50/-

Earning of 7 days by A= Rs. 350/-

Question 18: Pradeep receives an export order for garments. He has 30 machines to complete the order in 60 days. How many machines would be required to complete the job in 40 days?

   a) 45   b) 35

   c) 25   d) None

Solution: Answer is option (a) 45

Present the no of machines available = 30

No of days required = 60

Now no of days available = 40

No of machines required = x

Apply the basic unitary method

$60 \times 30 = 40 \times x$

$1800 = 40x$

$45 = x.$

Question 19: An employee has to attain 70% marks during appraisals to get a promotion. He gets 75 marks and does not qualify for a promotion since he falls short of 30 marks in the ratings. What is the maximum score that an employee can attain in the appraisal rating?

   a) **200**   b) **275**

   c) **150**   d) **350**

Solution: Answer is option © 150

 The employee has to attain 70 % marks

Let the maximum marks = x

He got marks = 75

 Falls short of marks = 30

So if he attained these 30 marks then he has secured 70 % marks

$$75+30 = \frac{70}{100} \times x$$

$$105 = \frac{70}{100} \times x$$

The value for x = 150

 This is the maximum value any employee can score.

Question 20: Supremo coal limited mined $8\frac{1}{3}$ tons of coal on Tuesday, $5\frac{3}{4}$ tons of coal on Monday and $9\frac{1}{2}$ tons of Coal on Wednesday. If the

coal is to mine 30 tons of coal this week then how many more tons of coal need to be mined?

a) 6.41   b) 7.5

c) 8.5   d) 5.2

Solution: Answer is option (a) 6.41

Amount of coal mined on Monday $= 5\dfrac{3}{4}$ tons

Amount of coal mined on Tuesday $= 8\dfrac{1}{3}$ tons

Amount of coal mined on Wednesday $= 9\dfrac{1}{2}$ tons

Total amount of coal mined $= 5\dfrac{3}{4} + 8\dfrac{1}{3} + 9\dfrac{1}{2}$

$= \dfrac{23}{4} + \dfrac{25}{3} + \dfrac{19}{2}$

$= \dfrac{69+100+114}{12}$

$= \dfrac{283}{12}$

Total amount to be mined for the week $= 30$ tons

Now the left amount to be mined $= 30 - \dfrac{283}{12}$

$= \dfrac{360-283}{12}$

$= \dfrac{77}{12}$

$= 6.41$ tons

Question 21: In how many can three leads be selected out of 5 males and 4 females if atleast one female must be selected?

      a) **74**   **b) 75**

      $c)$ **76**   **d) 70**

Solution: Answer is option (a) 74

74 ways

Here we are applying combination formula

$$(\text{as } {}^{n}_{r}C = \frac{n!}{r!(n-r)!})$$ and ! denotes the factorial of the number.

The possible cases are for atleast one female and form a team of 3 members are as follows :

(one female & two males) or (two females & one male) or (three females)

$= ({}^{4}_{1}C \times {}^{5}_{2}C) + ({}^{4}_{2}C \times {}^{5}_{1}C) + ({}^{4}_{3}C)$

=40+30+4=74

Question 22: A train Rajdhani starts from Suratkal at 5 am with the speed of 15 kmph. Another train Shatabadi starts from the same place in same direction at 7 am with the speed of 20 kmph. At what time will both the trains meet each other ?

      a) **2 pm**   **b) 12 noon**

      $c)$ **3 pm**   **d) 1 pm**

Solution: Answer is option (d) 1 pm

Speed of Rajdhani= 15 kmph

Time of start = 5 am

Speed of Shatabadi = 20 kmph

Time of start = 7 am

Rajdhani has already started 2 hours before so it has covered the distance = 2×15 = 30 km

So the relative distance between them to cover = 30 km

Both of them are running in the same direction so the relative speed of the train = 20-15 = 5 kmph

So they need to cover to 30 km with the speed 5 kmph

So the time required = 6 hours

Add 6 hours in 7 am

= 1 pm

Question 23: The tremors of earthquake were felt at intervals of 15 seconds. The first tremor was felt at 8:54:57 am and last tremor was felt at 10:45:12 am. How many times were the tremors felt?

    a) **421**   b) **412**

    c) **441**   d) **423**

Solution: Answer is option © 441

The total no of seconds between 8:54:57 am and 10:45:12 am is 6615 seconds

The interval between two tremors = 15 seconds

So the no of tremors = $\dfrac{6615}{15} = 441$

Question 24: The product of two co-primes is 253. What is the LCM of these numbers?

    a) 420   **b) 471**

    c) 253   **d) 423**

Solution: Answer is option © 253

Hence the numbers given as co –prime so their HCF = 1

Remember that, Product of two number = Product of their HCF and LCM

        $253 = 1 \times \text{LCM}$

        $253 = \text{LCM}$

Question 25: Three are three marketers who distribute their products in a colony for pilot testing. Marketer A distributes 150 items to the people equally and then was left with a few items. Marketer B distributes 270 items to the people equally and then was left with the same number of items as the number left with Marketer A. Marketer C distributes 320 items to the people and is left with the same number of items as the number left with marketer A. What is the maximum possible number of people in colony?

    a) 20   **b) 14**

    c) 10   **d) None**

Solution: Answer is option © 10

Let the no of people = x

And marketer A distributes no of items equally = a

And marketer B distributes no of items equally = b

And marketer C distributes no of items equally = c

The no of items left in each case same = y

So the desired equations are

$x \times a + y = 150$ ==➜ equation (1)

$x \times b + y = 270$ ==➜ equation (2)

$x \times c + y = 320$ ==➜ equation (3)

Subtract (2) from (3)

$x \times (c - b) = 50$

Subtract (1) from (2)

$x \times (b - a) = 120$

Subtract (1) from (3)

$x \times (c - b) = 170$

If we factorise the equations

$x \times (c - b) = 10 \times 5$

$x \times (b - a) = 10 \times 12$

$x \times (c - b) = 10 \times 17$

So the maximum number of people possible is 10

Or you can simply take the HCF of difference of each among three(270-150), (320-150), (320-270)

In this manner, the answer is 10 as well.

Question 26: Rasheb starts for a wedding venue at 6 pm and drives at a speed of 60kmph. Ramesh starts for the same venue at 6:30 pm, and

drives at a speed of 75kmph. When will both reach the venue, provided they reach at the same time?

a) **8:30 pm**   b) **8:14 pm**

c) **8:10 pm**   d) **None**

Solution: Answer is option a) 8:30 pm

Speed of Rasheb = 60 kmph

Let the time taken by Rasheb = x hr

Distance covered by Rasheb = 60x

Speed of Ramesh = 75 kmph

Let the time taken by Ramesh = y hr

Distance covered by Ramesh = 75y

The distance covered by them is same

60x = 75y

The ratio of x and y is

$$\frac{x}{y} = \frac{75}{60}$$

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

As the time difference between them is 30 minutes or 0.5 hr

So the time of arrival at the venue is same

We can calculate from either value of x or y

So the time taken by Rasheb to rach there = 2.5 hrs = 8:30 pm

Question 27: Abu company provides taxi for call center employees. The company has 7 Taveras, 5 Qualis, 6 Innovas and few small cars. If Tavera makes one fourth of the total fleet, how many small cars are there in the company?

a) 11   b) 14

c) 10   d) None

Solution: Answer is option © 10

Let the number of small cars= x

Then total no of cars = 7+5+6+x= 18+x

Now as per given condition

$$(18+x) \times \frac{1}{4} = 7$$

(18+x) =28

X= 10

Question 28: What is the sum of two consecutive numbers, the difference of whose squares is 19?

a) 19   b) 14

c) 10   d) None

Solution: Answer is option a) 19

Let the numbers be X and Y

X+Y = ???

As per given conditions:

$X^2 - Y^2 = 19$

Factorize the equation

$(X+Y)(X-Y) = 19$

Or we can write RHS as

$(X+Y)(X-Y) = 19 \times 1$

As the 19 is a prime number

So on comparison

$(X+Y) = 19$

Question 29: The number of 6- digit numbers that can be formed from 0,1,5,6,7,8 in which the first digit is not 0 are:

a) 720 ways   b) 640 ways

c) 730 ways   d) 600 ways

Solution: Answer is option (d) 600ways

Solution:

We have to form 6 digit number ___ ____ ____ ____ ____ _____

Among digits 0,1,5,6,7,8 in total we have 6 digits.

We can not place 0 at the place of first digit otherwise number will be 5 digit

The first place can be filled in 5 ways and for second place there are 5 digits left so 5 ways and for third place there are 4 digits left so 4 ways and for fourth place there are 3 digits left so 3 ways and for fifth place there is 2 digits left so 2 ways similarly, for sixth place only one digit left so 1 way so the required cases are

$$= 5\times5\times4\times3 \times2 \times1 = 600 \text{ ways}$$