Q16 : A person buys 18 local tickets for Rs 110. Each first class ticket costs Rs 10 and each second class ticket costs Rs 3. What will another lot of 18 tickets in which the numbers of first class and second class tickets are interchanged cost?

    a. 112   b. 118   c. 121   d. 124

Q17 : Students of a class are made to stand in rows. If 4 students are extra in each row, there would be 2 rows less. If 4 students are less in each row, there would be 4 more rows. The number of students in the class is:

    a. 90   b. 94   c. 92   d. 96

Q18 : In a factory, each day the expected number of accidents is related to the number of overtime hour by linear equation the following equation: $x = a + by$; where x is the number of accidents and y is the number of overtime hours and a, b are constants. Suppose that on one day there were 1000 overtime hours logged and 8 accidents reported and on another day there were 400 overtime hours logged and 5 accidents. What is the expected number of accidents when no overtime hours are logged?

    a. 2   b. 3   c. 4   d. 5

Q19 : The cost of fuel for running the engine of an army tank is proportional to the square of the speed and Rs. 64 per hour for a speed of 16 kmph. Other costs amount to Rs. 400 per hour. The tank has to make a journey of 400 km at a constant speed. The most economical speed for this journey is:

    a. 20 kmph   b. 32 kmph   c. 35 kmph   d. 40 kmph

Q20 : Abhishek had a certain number of Re1 coins, Rs 2 coins and Rs 10 coins. If the number of Re 1 coins he had is six times the number of Rs 2 coins Abhishek had, and the total worth of his coins is Rs 160, find the maximum number of Rs 10 coins Abhishek could have had.

    a. 12   b. 10   c. 8   d. 6

Q21 : N persons stand on the circumference of a circle at distinct points. Each possible pair of persons, not standing next to each other, sings a two-minute song one pair after the other. If the total time taken for singing is 28 minutes, what is N?

    a. 5   b. 7   c. 9   d. 4

Q22 : In a cricket match, India scored 232 runs without losing a wicket. The score consisted of byes, wides and runs scored by two opening batsmen: Shikhar and Murli. The runs scored by the two batsmen are 26 times wides. There are 8 more byes than wides. If the ratio of the runs scored by Shikhar and Murli is 6:7, then the runs scored by Shikhar is:

    a. 88   b. 96   c. 102   d. 112

Q23 : Determine k so that k+2, 4k-6 and 4k-2 are the three consecutive terms of an arithmetic progression.

    a. 2   b. 4   c. 8   d. -4

Q24 : If 7 times the 7th term of an A.P is equal to 11 times its eleventh term, find the 18th term of the A.P.

    a. 0   b. 5   c. 6   d. 3

Q25 : Find the three numbers in A.P whose sum is 21 and sum of their squares is 179.
    a. 3, 5, 7   b. 5, 9, 13   c. 6, 13, 20   d. 3, 7, 11

Q26 : In an arithmetic progression, $T4 : T7 :: 2 : 3$ then find $T3 : T11$.
    a. 12 : 13   b. 5 : 13   c. 22 : 21   d. 12 : 14

Q27 : Find the sum of all numbers between 200 and 400 which are divisible by 7.
    a. 1500   b. 4200   c. 8729   d. 6978

Q28 : Which term of the A.P. series: 3,8,13 …is the term 78?
    a. 74   b. 73   c. 78   d. 79

Q29 : Is – 150 a term of the series 11, 8, 5, 2,…?
    a. Yes   b. No   c. Maybe   d. Cannot be determined

Q30 : Which term of the A.P. 3, 15, 27, 39 … will be 132 more than its 54th term?
    a. 63rd   b. 64th   c. 65th   d. 66th

ANSWERS

Ans 16 : Option d

Let there are x first class ticket. Then, Total cost $= 10x+3*(18−x)$
$\Rightarrow 10x+54−3x=110 \Rightarrow 7x=56 \Rightarrow x=8$
If the first class and second class tickets are interchanged, then total
cost $=10×10+3×8= 124$

Ans 17 : Option d

Let number of rows be x and number of students in each row be n.
Then, total number of students $=x×n$
Again, $(n+4)(x−2)=(x−4)(n−4)=xn \Rightarrow n=12$ and $x=8$
Number of students$=12×8= 96$

Ans 18 : Option b

Number of accidents $x = a + by$, where y is the number of overtime hour.
$8=a+1000b$ -------- (i) and $5=a+400b$ -------- (ii)
On solving both the equations, we get: $a =3, b = 1/200$
For $y = 0, a = x = 3$

Ans 19 : Option d

Since, cost of the fuel is proportional to square of the speed. Thus, $E=KS^2$
For $E=64$ and $S=16$, we get $K = 1/4$

Total cost $= 400 * t + (1 / 4) * s * s * t$

By putting the given options, we can get the most economical speed at 40 kmph.

Ans 20 : Option a

If the Abhishek had x number of Rs 1, y number of Rs 2 coins and z number of Rs
10 coins, then total value of coins he had: $=x(1)+y(2)+z(10)=x+2y+10z=160$

Since, $6y=x : 8y+10z=160$
$= > z = (160 − 8y)/10$
For solving this, the minimum value of y is 5.
So, the maximum value of 'z' is 12

Ans 21 : Option b

Each person will form a pair with all other persons except the two beside him.
Hence he will form (n−3) pairs. If we consider each person, total pairs =n(n−3) but here each pair is counted twice.
Hence actual number of pairs = n (n-3) / 2
They will sing for = (n(n-3) / 2)*2 = 28

On solving this, we get n = 7.

Ans 22 : Option b

Let the number of runs scored by byes, wides and both the players combined be x, y and z respectively. Then,
$x + y + z = 232$ -------- (i)
The runs scored by the two batsmen are 26 times the wides:
$z=26y$ --------- (ii)
There are 8 more byes than wides:
$x=y+8$ -------- (iii)
Substituting equations (iii) and (ii) in equation (i),
we get, y=8 and z=208

The runs scored by Shikhar and Murli were in the ratio 6 : 7
Let the runs scored by Shikhar be 6r and by Murli be 7r.
$13r=208 \Rightarrow r=16$
Runs scored by Shikhar =16 * 6 = 96

Ans 23 : Option b

For A, B and C to be in A.P., 2B = A + C
Thus, 2(4k − 6) = k + 2 + 4k -2
$\Rightarrow$ K = 4

Ans 24 : Option a

Using the information, 7 (A + 6D) = 11 (A + 10D) => 7A + 42D = 11A + 110D
$\Rightarrow$ 4A + 68D = 0 => A + 17D = 0
$\Rightarrow$ Thus, the 18th term of this AP is 0.

Ans 25 : Option d

Let the three numbers in AP be a − d, a, a +d.
Thus, a − d + a + a + d = 21 => a = 7

Also, $(7 − d)^2 + 7^2 + (7 + d)^2 = 179$

=> 49 + d^2 − 14d + 49 + 49 + d^2 + 14d = 179

⇨ 2d^2 = 179 − 147 => d^2 = 16 => d = 4 or -4

⇨ Thus, the numbers are 3, 7, 11.

Ans 26 : Option b

(A + 3D) / (A + 6D) = 2 / 3 => 3A + 9D = 2A + 12D => A = 3D

Now, For T3 : T11 => A + 2D / A + 10D => 3D + 2D / 3D + 10D => 5 : 13

Ans 27 : Option c

Between 200 and 400, the numbers divisible by 7 starts from 203, 210, 217, ..., 392, 399.

So, in this series –> a =203 and d =7 and l = 399. Total number of terms = [(399 − 203) /7] + 1 = 29.

So, sum of the series will be = (29/2)[203 + 399] = 29 * 602 / 2 = 29 * 301 = 8729.

Ans 28 : Option c

Here a$_n$ = a + (n − 1) d = 78
We have a= 3, d = 8- 3 = 5
Therefore, 3 + (n -1) (5) = 78 => (n-1) * 5 = 78 − 3 = 75 => n − 1 = 75/5 = 15
n = 15 + 1 = 16
Hence a $_{16}$ (sixteenth term) is 78.

Ans 29 : Option b

Here, a = 11, d = 8-11 = -3. Let a$_n$ = -150
Therefore, a + (n-1) d = -150 => 11+ (n-1) (-3) = -150 => -3 (n-1) = -150 − 11 = -161
(n-1) = + 161/3 = 53 2/3 which is not an integral number.

Since number of terms can never be a fraction
Hence, -150 is not a term of the given series.

Ans 30 : Option c

Given series is 3, 15, 27, 39…
Here, a =3, d= 15-3 = 12

Since $a_n = a_k = (n-k)\,d$

$a_n - a_{54} = (n-54)\,12$

$132 = 12n - 54 * 12$ …..(since $a_n - a_{54} = 132$ given)

$12\,n = 132 + 54 * 12 = 12\,(11+ 54)$

$n= 11 + 54 = 65$