Q1 - 2024 (01 Feb Shift 1)

Let $3, a, b, c$ be in A.P. and $3, a-1, b+1, c+9$ be in G.P. Then, the arithmetic mean of a, b and c is :

(1) -4

(2) -1

(3) 13

(4) 11

Q2 - 2024 (01 Feb Shift 1)

Let $3, 7, 11, 15, \ldots, 403$ and $2, 5, 8, 11, \ldots, 404$ be two arithmetic progressions. Then the sum, of the common terms in them, is equal to

Q3 - 2024 (01 Feb Shift 2)

Let S_n denote the sum of the first n terms of an arithmetic progression. If $S_{10} = 390$ and the ratio of the tenth and the fifth terms is $15 : 7$, then $S_{15} - S_5$ is equal to:

(1) 800

(2) 890

(3) 790

(4) 690

Q4 - 2024 (01 Feb Shift 2)

If three successive terms of a G.P. with common ratio $r (r > 1)$ are the lengths of the sides of a triangle and $[r]$ denotes the greatest integer less than or equal to r, then $3[r] + [-r]$ is equal to :

Q5 - 2024 (27 Jan Shift 1)

The number of common terms in the progressions $4, 9, 14, 19, \ldots\ldots$, up to 25^{th} term and $3, 6, 9, 12$, up to 37^{th} term is :

(1) 9

(2) 5

(3) 7

(4) 8

(1) 9

(2) 5

(3) 7

(4) 8

Q6 - 2024 (27 Jan Shift 1)

If

$8 = 3 + \frac{1}{4}(3+p) + \frac{1}{4^2}(3+2p) + \frac{1}{4^3}(3+3p) + \ldots \infty,$

then the value of p is_____

Q7 - 2024 (27 Jan Shift 2)

The 20^{th} term from the end of the progression $20, 19\frac{1}{4}, 18\frac{1}{2}, 17\frac{3}{4}, \ldots, -129\frac{1}{4}$ is :-

(1) -118

(2) -110

(3) -115

(4) -100

Q8 - 2024 (29 Jan Shift 1)

If in a G.P. of 64 terms, the sum of all the terms is 7 times the sum of the odd terms of the G.P, then the common ratio of the G.P. is equal to

(1) 7

(2) 4

(3) 5

(4) 6

Q9 - 2024 (29 Jan Shift 1)

In an A.P., the sixth terms $a_6 = 2$. If the $a_1a_4a_5$ is the greatest, then the common difference of the A.P., is equal to

(1) $\frac{3}{2}$

(2) $\frac{8}{5}$

(3) $\frac{2}{3}$

(4) $\frac{5}{8}$

Q10 - 2024 (29 Jan Shift 2)

If $\log_e a, \log_e b, \log_e c$ are in an A.P. and $\log_e a - \log_e 2b, \log_e 2b - \log_e 3c, \log_e 3c - \log_e a$ are also in an A.P, then a : b : c is equal to

(1) 9 : 6 : 4

(2) 16 : 4 : 1

(3) 25 : 10 : 4

(4) 6 : 3 : 2

Q11 - 2024 (29 Jan Shift 2)

If each term of a geometric progression $a_1, a_2, a_3, \ldots$ with $a_1 = \frac{1}{8}$ and $a_2 \neq a_1$, is the arithmetic mean of the next two terms and $S_n = a_1 + a_2 + \ldots + a_n$, then $S_{20} - S_{18}$ is equal to

(1) 2^{15}

(2) -2^{18}

(3) 2^{18}

(4) -2^{15}

Q12 - 2024 (30 Jan Shift 1)

Let S_a denote the sum of first n terms an arithmetic progression. If $S_{20} = 790$ and $S_{10} = 145$, then $S_{15} - S_5$ is :

(1) 395

(2) 390

(3) 405

(4) 410

Q13 - 2024 (30 Jan Shift 1)

Let $\alpha = 1^2 + 4^2 + 8^2 + 13^2 + 19^2 + 26^2 + \ldots\ldots$ upto 10 terms and $\beta = \sum_{n=1}^{10} n^4$. If $4\alpha - \beta = 55k + 40$, then k is equal to

Q14 - 2024 (30 Jan Shift 2)

Let a and b be be two distinct positive real numbers. Let 11^{th} term of a GP, whose first term is a and third term is b, is equal to p^{th} term of another GP, whose first term is a and fifth term is b. Then p is equal to

(1) 20

(2) 25

(3) 21

(4) 24

Q15 - 2024 (30 Jan Shift 2)

Let S_n be the sum to n-terms of an arithmetic progression $3, 7, 11, \ldots\ldots$.

If $40 < \left(\frac{6}{n(n+1)} \sum_{k=1}^{n} s_k\right) < 42$, then n equals_____.

Q16 - 2024 (31 Jan Shift 1)

The sum of the series $\frac{1}{1-3\cdot1^2+1^4} + \frac{2}{1-3\cdot2^2+2^4} + \frac{3}{1-3\cdot3^2+3^4} + \ldots$ up to 10 terms is

(1) $\frac{45}{109}$

(2) $-\frac{45}{109}$

(3) $\frac{55}{109}$

(4) $-\frac{55}{109}$

Q17 - 2024 (31 Jan Shift 2)

Let 2^{nd}, 8^{th} and 44^{th}, terms of a non-constant A.P. be respectively the 1^{st}, 2^{nd} and 3^{rd} terms of G.P. If the first term of A.P. is 1 then the sum of first 20 terms is equal to-

(1) 980

(2) 960

(3) 990

(4) 970

Answer Key

Q1 (4) **Q2** (6699) **Q3** (3) **Q4** (1)

Q5 (3) **Q6** (9) **Q7** (3) **Q8** (4)

Q9 (2) **Q10** (1) **Q11** (4) **Q12** (1)

Q13 (353) **Q14** (3) **Q15** (9) **Q16** (4)

Q17 (4)