ARITHMETIC PROGRESSIONS

Q.1) If the sum of first n terms of an AP be $3n^2 - n$ and it's common difference is 6, then its first term is :

(A) 2 (B) 3

(C) 1 (D) 4

Q.2) If 7^{th} and 13^{th} terms of an A.P. be 34 and 64, respectively, then it's 18^{th} term is :

(A) 87 (B) 88

(C) 89 (D) 90

Q.3) The sum of all 2-digit odd numbers is :

(A) 2475 (B) 2530

(C) 4905 (D) 5049

Q.4) In an A.P. $s_1 = 6$, $s_7 = 105$, then $s_n : s_{n-3}$ is same as :

(A) (n + 3) : (n – 3) (B) (n + 3) : n

(C) n : (n – 3) (D) None of these

Q.5) In an A.P. $s_3 = 6$, $s_6 = 3$, then it's common difference is equal to :

(A) 3 (B) – 1

(C) 1 (D) None of these

Q.6) The number of terms common to the two A.P. s

2 + 5 + 8 + 11 + ….+ 98 and 3 + 8 + 13 + 18 + … + 198

(A) 33 (B) 40

(C) 7 (D) None of these

Q.7) (p + q)th and (p – q)th terms of an A.P. are respectively m and n, The P^{th} term is :

(A) $\frac{1}{2}(m + n)$ (B) $\sqrt{mn}$

(C) m + n (D) mn

Q.8) The first, second and last terms of an A.P. are a, b and 2a. The number of terms in the A.P. is:

(A) $\frac{b}{b-a}$ (B) $\frac{b}{b+a}$

(C) $\frac{a}{b-a}$ (D) $\frac{a}{a+b}$

Q.9) Let s_1, s_2, s_3 be the sums of n terms of three series in A.P., the first term of each being 1 and the common differences 1, 2, 3 respectively. If $s_1 + s_3 = \lambda s_2$, then the value of λ is :

(A) 1 (B) 2

(C) 3 (D) None of these

Q.10) Sum of first 5 terms of an A.P. is one fourth of the sum of next five terms. If the first term = 2, then the common difference of the A.P. is :

(A) 6 (B) – 6

(C) 3 (D) None of these

Q.11) If x, y, z are in A.P., then the value of (x + y – z) (y + z –x) is equal to :

(A) $8yz - 3y^2 - 4z^2$ (B) $8yz - 3z^2 - 4y^2$

(C) $8yz + 3y^2 - 4z^2$ (D) $8yz - 3y^2 + 4z^2$

Q.12) The number of numbers between 105 and 1000 which are divisible by 7 is :

(A) 142 (B) 128

(C) 127 (D) None of these

Q.13) If the numbers a, b, c, d, e form an A.P. then the value of a – 4b + 6c – 4d + e is equal to :

(A) 1 (B) 2

(C) 0 (D) None of these

Q.14) If s_n denotes the sum of first n terms of an A.P., whose common difference is d, then $s_n - 2s_{n-1} + s_{n-2}$ (n > 2) is equal to :

(A) 2d (B) – d
(C) d (D) None of these

Q.15) The first term of an A.P. of consecutive integers is $p^2 + 1$. The sum of 2p + 1 terms of this series can be expressed as :
(A) $(p + 1)^2$ (B) $(2p + 1)(p + 1)^2$
(C) $(p + 1)^3$ (D) $p3 + (p + 1)^3$

Q.16) If the last term of an AP is 119 and the 8th term from the end is 91 then the common difference of the AP is –
(A) 2 (B) 4
(C) 3 (D) – 3

Q.17) If $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in A.P., then $\left[\frac{1}{a}+\frac{1}{b}-\frac{1}{c}\right]\left[\frac{1}{b}+\frac{1}{c}-\frac{1}{a}\right]$ is equal to :
(A) $\frac{4}{ac}-\frac{3}{b^2}$ (B) $\frac{b^2-ac}{a^2b^2c^2}$
(C) $\frac{4}{ac}-\frac{1}{b^2}$ (D) None of these

Q.18) The sum of first 24 terms of an A.P. a_1, a_2, a_3,....; if it is known that $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$, is equal to :
(A) 90 (B) 180
(C) 900 (D) 1800

Q.19) A student read common difference of an AP is – 2 instead of 2 and got the sum of first five terms as – 5. The actual sum of first five terms is :
(A) 25 (B) – 25
(C) – 35 (D) 35

Q.20) The sum of n terms of two A.P's are in the ratio of (7n + 1) : (4n + 27). The ratio of their 11th terms is –
(A) 2 : 3 (B) 4 : 3
(C) 5 : 4 (D) 5 : 6

Q.21) If the roots of the equation $x^3 - 12x^2 + 39x - 28 = 0$ are in A.P., then their common difference will be:
(A) ± 1 (B) ± 2
(C) ± 3 (D) ± 4

Q.22) If a, b, c, d, e, f are in A.P. then e-c is equal to :
(A) 2(c – a) (B) 2(f – d)
(C) 2(d – c) (D) d – c

Q.23) If the value of 1 + 2 + 3 + … + n is 55, then the value of $1^3 + 2^3 + 3^3 + \ldots + n^3$ is:
(A) 165 (B) 385
(C) 3025 (D) 555

Q.24) The sum of n terms of the series $(1^2 - 2^2) + (3^2 - 4^2) + (5^2 - 6^2) + ,,,$ is :
(A) $\frac{n(n+1)}{2}$ (B) $\frac{-n(n+1)}{2}$
(C) – n(2n + 1) (D) None of these

Q.25) If $\frac{1}{a}, \frac{a^n+b^n}{a^{n+1}+b^{n+1}}, \frac{1}{b}$ are in A.P., then n is equal to :
(A) 0 (B) – 1
(C) $\frac{1}{2}$ (D) None of these

Q.26) If $S_n = nP + \frac{1}{2}n(n - 1)Q$ where S_n denotes the sum of the first n terms of an A.P., then the common difference of the A.P. is
(A) P + Q (B) 2P + 3Q
(C) 2Q (D) Q

Q.27) The sum of first four terms of an A.P. is 56 and sum of last four terms is 112. If the first term is 11, then the number of terms is :

(A) 10 (B) 12

(C) 11 (D) None of these

Q.28) Sum of first m terms of an A.P. is 0. If a be the first term of the A.P., then the sum of next n terms is :

(A) $\frac{-a(m+n)m}{m-1}$ (B) $\frac{-a(m+n)n}{m-1}$

(C) $\frac{-a(m+n)n}{n-1}$ (D) $\frac{-a(m+n)m}{n-1}$

Q.29) If a, b, c are in A.P., then which one of the following is not true?

(A) a + k, b + k, c + k are in A.P.

(B) ka, kb, kc are in A.P.

(C) a^2, b^2, c^2 are in A.P.

(D) a + b, c + a, b + c are in A.P.

Q.30) If the sum of the first 2n terms of the A.P. 2, 5, 8,… is equal to the sum of first n term of the A.P.57, 59, 61,… then n equals :

(A) 10 (B)12

(C)11 (D) 13

Answer Sheet

Q.1	A	Q.11	A	Q.21	C
Q.2	C	Q.12	C	Q.22	C
Q.3	A	Q.13	C	Q.23	C
Q.4	A	Q.14	C	Q.24	C
Q.5	B	Q.15	D	Q.25	B
Q.6	C	Q.16	B	Q.26	D
Q.7	A	Q.17	A	Q.27	C
Q.8	A	Q.18	C	Q.28	B
Q.9	B	Q.19	D	Q.29	C
Q.10	B	Q.20	B	Q.30	C