MATHSIR.IN

Arithmetic Progressions
CLASS 10 - MATHEMATICS

Time Allowed: 45 minutes **Maximum Marks :** 75

Section A

1) Which term of the AP 72, 63, 54 ..... is 0? **[1]**
   a) 8th b) 11th
   c) 10th d) 9th

2) The sum of first n terms of an AP is $(5n - n^2)$. The nth term of the AP is **[1]**
   a) (5 - 2n) b) (6 - 2n)
   c) (2n - 6) d) (2n - 5)

3) If four numbers in A.P. are such that their sum is 50 and the greatest number is 4 times the least, then the numbers are **[1]**
   a) 5, 10, 15, 20 b) 3, 9, 13, 17
   c) 4, 10, 16, 22 d) 3, 7, 11, 15

4) If k, 2k – 1 and 2k + 1 are three consecutive terms of an AP, the value of k is **[1]**
   a) - 2 b) 3
   c) - 3 d) 6

5) In an A.P., if $a_m = \frac{1}{n}$ and $a_n = \frac{1}{m}$, then a_{mn} = **[1]**
   a) 1 b) - 1
   c) 0 d) 2

6) The 7th term of an AP is - 1 and its 16th term is 17. The nth term of the AP is **[1]**
   a) (3n + 8) b) (15 - 2n)
   c) (4n - 7) d) (2n - 15)

7) In an A.P. it is given that a = 5, d = 3 and a_n = 50, then the value of n is **[1]**
   a) 16 b) 20
   c) 18 d) 15

8) If the sum of three consecutive terms of an increasing A.P. is 51 and the product of the first and third of these terms is 273, then the third term is **[1]**
   a) 13 b) 9
   c) 21 d) 17

9) The 11^{th} term from the end of the A.P.: 10, 7, 4, ..., - 62 is: **[1]**
   a) 0 b) - 32
   c) 25 d) 16

10) If $\frac{1}{x+2}, \frac{1}{x+3}, \frac{1}{x+5}$ are in A.P. Then, x = **[1]**
   a) 5 b) 2
   c) 1 d) 3

11) The 11th term of the AP:$-5, \frac{-5}{2}, 0, \frac{5}{2}$,...is **[1]**
   a) –20 b) 20
   c) –30 d) 30

12) The first term of an A.P. is m and its common difference is n, then its 10th term is **[1]**
   a) 9m + n b) 9m - n
   c) M - 9n d) M + 9n

13) Find the sum of the progression: (5 + 13 + 21 + ... + 181) **[1]**
   a) 2476 b) 2337
   c) 2219 d) 2139

14) If the sum of first n terms of an A.P. is $3n^2 + 4n$ and its common difference is 6, then its first term is: **[1]**
   a) 7 b) 4
   c) 6 d) 3

15) In an A.P., if the first term (a) = - 16 and the common difference (d) = - 2, then the sum of first 10 terms is: **[1]**
   a) - 250 b) - 200
   c) 250 d) - 70

16) The 8^{th} term of an A.P. is 17 and its 14^{th} term is 29. The common difference of this A.P. is: **[1]**
   a) 3 b) 2
   c) 5 d) - 2

17) The common difference of the A.P. is $\frac{1}{2q}$, $\frac{1-2q}{2q}, \frac{1-4q}{2q}$ ..... **[1]**
   a) 2q b) 1
   c) - 1 d) Q

18) If the first three terms of an A.P. are 3p - 1, 3p + 5, 5p + 1 respectively; then the value of p is: **[1]**
   a) 5 b) 2
   c) - 3 d) 4

19) If a, 7, b, 23, c are in A.P. then the value of c is **[1]**
   a) – 1 b) 0
   c) 31 d) 8

20) The nth term of the A.P. 63, 65, 67, 69, ... and the A.P. 3, 10, 17, 24, ... are equal, then the value of n is **[1]**
   a) 14 b) 15
   c) 13 d) 12

21) The list of numbers – 10, – 6, – 2, 2, …….. is **[1]**
   a) An AP with d = – 4 b) Not an AP
   c) An AP with d = 4 d) An AP with d = 8

22) A thief runs away from a police station with a uniform speed of 100 m/minute. After one minute a policeman runs behind the thief to catch him. He goes at speed of 100 m/minute in first minute and increases his speed 10 m each succeeding minute. After how many minutes, the policeman will catch the thief? **[1]**
   a) 3 mins b) 5 mins
   c) 2 mins d) 4 mins

23) The common difference of the A.P. whose n^{th} term is given by $a_n = 3n + 7$, is: **[1]**
   a) 3 b) 7
   c) 3n d) 1

24) If $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the A.M. between a and b, then find the value of n. **[1]**
   a) 3 b) 2
   c) 0 d) 1

25) The sum of n terms of two A.P.'s are in the ratio 5n + 4 : 9n + 6. Then, the ratio of their 18th terms is **[1]**

a) $\frac{175}{321}$ b) $\frac{179}{321}$
c) $\frac{176}{321}$ d) $\frac{178}{321}$

26) If x, 2x + 9, 4x + 3 are three consecutive terms of an A.P., then the value of x is: **[1]**
a) 3 b) 10
c) 15 d) 13

27) The sum of the first 100 even natural numbers is: **[1]**
a) 2550 b) 10100
c) 5050 d) 10010

28) If the sum of the n terms of an A.P is $2n^2+5n$, then its nth term is **[1]**
a) N - 4 b) 4n + 3
c) 4n - 3 d) 3n + 4

29) If the first term of an AP is - 5 and the common difference is 2, then the sum of the first 6 terms is **[1]**
a) 0 b) 15
c) 5 d) 6

30) The 7th term of an AP is 4 and its common difference is - 4. What is its first term? **[1]**
a) 28 b) 20
c) 24 d) 16

31) The n^{th} term of an A.P., the sum of whose n terms is S_n, is **[1]**
a) $\mathbf{S}_n - \mathbf{S}_{n-1}$
b) $\mathbf{S}_n - \mathbf{S}_{n+1}$
c) $\mathbf{S}_n + \mathbf{S}_{n+1}$
d) $\mathbf{S}_n + \mathbf{S}_{n-1}$

32) In an AP if a = –7.2, d = 3.6, a_n = 7.2, then n is **[1]**
a) 3 b) 4
c) 5 d) 1

33) The first term of an AP is p and the common difference is q, then its 10^{th} term is **[1]**
a) P + 9q b) P - 9q
c) Q + 9p d) 2p + 9q

34) Which of the following is**not** an A.P.? **[1]**
a) 3, $3+\sqrt{2}$, $3 + 2\sqrt{2}$, $3 + 3\sqrt{2}$, ...
b) $\frac{4}{3}, \frac{7}{3}, \frac{9}{3}, \frac{12}{3}$,....
c) $\frac{-1}{5}, \frac{-2}{5}, \frac{-3}{5}$,....
d) – 1.2, 0.8, 2.8, ...

35) Two persons Harsh and pankaj joined D.W. Associates. Harsh and Pankaj started with an initial salary of ₹50000 and ₹64000 respectively with annual increment of ₹2500 and ₹2000 each respectively. In which year will Harsh start earning more salary than Pankaj? **[1]**
a) 27^{th} b) 28^{th}
c) 29^{th} d) 30^{th}

36) The 13th term of an AP is 4 times its 3rd term. If its 5th term is 16 then the sum of its first ten terms is **[1]**
a) 150 b) 160
c) 135 d) 175

37) In an A.P., the third term is 16 and the 7th term exceeds the 5th term by 12, then its first term is **[1]**
a) 3 b) 2
c) 4 d) 1

38) The 17th term of an AP exceeds its 10th term by 7, then the common difference is **[1]**
a) 1 b) – 1
c) 0 d) 2

39) The 14^{th} term from the end of the A.P. - 11, - 8, - 5, ..., 49 is: **[1]**
a) 13 b) 7
c) 28 d) 10

40) Which of the following statement is correct?
i. Sum of n terms of the list of numbers $\sqrt{2}$, $\sqrt{8}$, $\sqrt{18}$, $\sqrt{32}$,... is $\frac{n(n+1)}{\sqrt{2}}$.
ii. The common difference of the A.P. given by a_n = 3n + 2 is 3.
iii. The sum of the A.P. (- 5), (- 8), (- 11).... (- 230) is - 8930.
[1]
a) Only (a) b) (a), (b) and (c)
c) Only (a) and (b) d) Only (b)

41) The 9^{th} term of the A.P. – 15, –11, –7, ..., 49 is: **[1]**
a) 13 b) 32
c) 0 d) 17

42) If the nth term of an A.P. is 2n + 1, then the sum of first n terms of the A.P. is **[1]**
a) N (n + 2) b) N (n – 2)
c) N (n + 1) d) N (n – 1)

43) In an A.P., if the p^{th} term is **q** and the q^{th} term is **p** then its n^{th} term is _____. **[1]**
a) P - q + n b) P + q - n
c) P - q - n d) P + q + n

44) If - 5, x, 3 are three consecutive terms of an A.P., then the value of x is **[1]**
a) - 2 b) 1
c) 2 d) - 1

45) In an A.P., the sum of first n terms is $\frac{3n^2}{2} + \frac{13n}{2}$. Find its 25^{th} term. **[1]**
a) 60 b) 80
c) 78 d) 120

46) If a_n denotes the nth term of the AP 3, 8, 13, 18,... then what is the value of $(a_{30} - a_{20})$? **[1]**
a) 36 b) 40
c) 50 d) 56

47) The famous mathematician associated with finding the sum of the first 100 natural numbers is **[1]**
a) Gauss b) Pythagoras
c) Euclid d) Ramanujan

48) If a, b and c are in A.P., then the relation between them is given by **[1]**
a) 2b = a + c b) 2a = b + c
c) 2c = a + b d) A = b + c

49) If 7 times the 7th term of an AP is equal to 11 times its 11th term, then its 18th term will be **[1]**
a) 18 b) 7
c) 11 d) 0

50) How many terms are there in the A.P. given below?
14, 19, 24, 29, ..., 119 **[1]**
a) 14 b) 22
c) 21 d) 18

51) The common difference of the A.P $\frac{1}{2b}, \frac{1-6b}{2b}, \frac{1-12b}{2b}$ ....is **[1]**
a) - 3 b) 3
c) - 2b d) 2b

52) In an A P, S_p = q, S_q = p and S_r denotes the sum of first r terms. Then, S_{p+q} is equal to **[1]**
a) P + q b) Pq
c) 0 d) - (p + q)

53) The sum of first five multiples of 3 is **[1]**
a) 55 b) 45
c) 65 d) 50

54) The common difference of the A.P whose a_n = - 3n + 7 is **[1]**
a) 3 b) 1
c) 2 d) - 3

55) The 6th term from the end of the A.P. 5, 2, - 1, - 4, ..., - 31, is **[1]**
a) - 22 b) - 25
c) - 16 d) - 19

56) Four numbers are inserted between the numbers 5 and 95 such that an A.P. results. Find the biggest of these four numbers. **[1]**
a) 77 b) 80
c) 70 d) 85

57) The first and last terms of an A.P. are 1 and 11. If their sum is 36, then the number of terms will be **[1]**
a) 5 b) 8
c) 6 d) 7

58) If S_1 is the sum of an arithmetic progression of n odd numbers of and S_2 is the sum of the terms of the series at odd places, then $\frac{S_1}{S_2}$ = **[1]**
a) $\frac{n-1}{n}$ b) $\frac{n+1}{2n}$
c) $\frac{11}{n+1}$ d) $\frac{2n}{n+1}$

59) If $\frac{5+9+13+\text{... to } n \text{ terms}}{7+9+11+\text{... to } (n+1) \text{ terms}} = \frac{17}{16}$ then, n = **[1]**
a) 8 b) 7
c) 10 d) 11

60) If p - 1, p + 1 and 2p + 3 are in A.P., then the value of p is **[1]**
a) - 2 b) 0
c) 4 d) 2

61) In an AP, if a = 1, a_n = 20 and S_n = 399, then n is equal to **[1]**
a) 38 b) 42
c) 19 d) 21

62) The first term of an A.P., if its $S_n = n^2 + 2n$ is **[1]**
a) 3 b) 0
c) 2 d) 1

63) The nth term of the A.P. $\sqrt{2}, 2\sqrt{2}, 3\sqrt{2}$ ... is **[1]**
a) $2\sqrt{n}$ b) (n - 1)$\sqrt{2}$
c) $n\sqrt{2}$ d) $\sqrt{2n}$

64) If 7th and 13th terms of an A.P. be 34 and 64 respectively, then its 18th term is **[1]**
a) 88 b) 87
c) 90 d) 89

65) If 9th term of an A.P. is zero, then its 29th term is _____ its 19th term. **[1]**
a) Equal to b) Half of
c) Twice of d) Thrice of

66) The sum of three terms of an A.P. is 72, then its middle term is **[1]**
a) 20 b) 24
c) 36 d) 18

67) If in an A.P., a = 2 and S_{10} = 335, then its 10th term is: **[1]**
a) 58 b) 55
c) 65 d) 68

68) If common difference of an A.P. is - 6, then value of a_{20} - a_{14} is: **[1]**
a) 6 b) 36
c) - 36 d) - 6

69) Let $S_n$denote the sum of n terms of an A.P. whose first term is a. If the common difference d is given by $d = S_n - kS_{n-1} + S_{n-2}$ then k = **[1]**
a) 2 b) 4
c) 3 d) 1

70) In an AP, if a = 3.5, d = 0 and n = 101, thena_n = **[1]**
a) 0 b) 1
c) 103.5 d) 3.5

71) The common difference of an A.P., if a_{23} - a_{19} = 32, is: **[1]**
a) - 4 b) 4
c) - 8 d) 8

72) The common difference of the AP$\frac{1}{p}$, $\frac{1-p}{p}$, $\frac{1-2p}{p}$, ...is **[1]**
a) - 1 b) $-\frac{1}{p}$
c) 1 d) $\frac{1}{p}$

73) The sum of the first 10 terms of the A.P. z - 8, z - 2, z + 4,...., is **[1]**
a) 190 + 10z b) 190 - 10z
c) 10z - 190 d) 10z + 180

74) The next term of the A.P.:$\sqrt{6}, \sqrt{24}, \sqrt{54}$ is: **[1]**
a) $\sqrt{60}$ b) $\sqrt{96}$
c) $\sqrt{216}$ d) $\sqrt{72}$

75) The common difference of the A.P whose $S_n = 3n^2 + 7n$ is **[1]**
a) 2 b) 5
c) 6 d) 1