

ELITE'S GRID

(Sequence & Series Assignment 1)

1) if a, b, c are in GP and $a+3, b+3, c+3$ are in HP then

a) $b=2$ b) $b=3$ c) $b=1$ d) $b=0$

2) The sum of first two terms of an infinite GP is 1 and every term is twice the sum of successive terms .. Find its first term .

a) $1/3$ b) $2/3$ c) $3/4$ d) $1/4$

3) if first and $(2n-1)$ th terms of an AP, GP and HP are equal and their n th terms are a, b, c respectively then

a) $a=b=c$ b) $a+c=b$ c) $a > b > c$ and $ac-b^2=0$ d) NOTA

4) The sum of n terms of an AP is $3n^2+5$. Find term which is equal to 159

a) 13 b) 21 c) 27 d) nota

5) A GP consists of an even number of terms . If the sum of all terms is 5 times the sum of the terms occupying odd places , find common ratio

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

6) The sum of integers from 1 to 100 which are divisible by 2 or 5 is

a) 3000 b) 3010 c) 3150 d) 3050

7) If a, b, c, d, e, f are AM's between 2 and 12 , then find $a+b+c+d+e+f$

a) 14 b) 42 c) 84 d) not

8) find sum of n terms of two Arithmetic progressions are in the ratio of $2n+3:6n+5$, then find ratio of 13th terms is

a) 55:155 b) 27:87 c) 29:83 d) 31:86

9) The maximum sum of the series $20 + (58/3) + (56/3) + \dots$

a) 310 b) 300 c) 320 d) not

10) The sixth term of an AP is equal to 2 , then value of common difference of AP which makes the product $a_1 \cdot a_4 \cdot a_5$ least

a) $d=8/5$ b) $d=5/4$ c) $2/3$ d) not

11) In a GP if the $(m+n)$ th term is p and $(m-n)$ th term is q find m term

a) 0 b) pq c) $(pq)^{1/2}$ d) not

12) If 7th term of an HP is $1/10$ and 12th term is $1/25$ find 20th term

a) $1/37$ b) $1/41$ c) $1/45$ d) $1/49$

13) if a, b, c are in GP and $a-b, c-a$ and $b-c$ are in HP, then find value of $a+4b+c$

a) -3 b) 0 c) 3 d) not

14) IF S_1, S_2 and S_3 be the sum of $n, 2n, 3n$ terms respectively of an AP then

a) $S_3 = S_1 + S_2$ b) $S_3 = 2(S_1 + S_2)$ c) $S_3 = 3(S_2 - S_1)$ d) not

15) If sum of first n natural numbers is $1/5$ times the sum of their squares, then the value of n is
a) 5 b) 6 c) 7 d) 8

16) If length of sides of a right angled triangle are in AP, then their ratio is
a) 2:3:4 b) 3:4:5 c) 4:5:6 d) not

17) Find sum of 11 terms of an AP whose middle term is 30 is
a) 320 b) 330 c) 340 d) 350

18) If three numbers are in HP, then the numbers obtained by subtracting half of middle number from each of them are in
a) AP b) GP c) HP d) Not

19) The sum of the integers from 1 to 100 which are not divisible by 3 or 5 is
a) 2489 b) 4735 c) 2632 d) 2317

20) Find sum of the series
 $1 - 3 + 5 - 7 + 9 - 11 + \dots$ to n terms is

a) $-n$, when n is even b) $2n$, when n is even c) $-n$, when n is odd d) $2n$, when n is odd

21) Find geometric mean between -9 and -16 is
a) 12 b) -12 c) -13 d) not

22) If the sum of 1st 12 no. is equal to sum of 1st 18 no., then find the sum of 1st 30 terms of this AP

23) How many terms are identical in the arithmetic progressions 36, 72, 108, 144, ..., 1584 and 48, 96, 144, 192, ..., 1680?

24) The number of common terms in the two sequences 17, 21, 25, ..., 417 and 16, 21, 26, ..., 466 is [CAT 2008]
1) 78
2) 19
3) 20
4) 77
5) 22

25) If 25th term of an AP is 50, then find the sum of first 50 terms of that AP. and 49 terms of an AP

26) x , 17, $3x - y^2 - 2$, and $3x + y^2 - 30$ are four consecutive terms of an increasing arithmetic sequence. The sum of the four numbers is divisible by
A. 2 B. 3 C. 5 D. 7 E. 11

27) If $(7)^{1/p} = (49)^{1/q} = (2401)^{1/r}$, then p , q and r are in
(a) A.P. (b) G.P. (c) H.P. (d) Cannot be determined

28) $x^4 - 40x^2 + q = 0$ is an equation having four real solutions which form an arithmetic progression. How many different values 'q' can take
a) 1 b) 2 c) 3 d) 4

29) If the sum of the first 'n' terms of an Arithmetic Progression is 100 and the sum of the next 'n' terms of the Arithmetic Progression is 300, then what is the ratio of the first term and the common difference?

(a) 2 : 1 (b) 1 : 2 (c) 1 : 3 (d) Cannot be determined

30) Find the harmonic mean of two numbers whose geometric mean and arithmetic mean is 8 and 5 respectively.

31) Let ABC be a 3-digit number such that its digits A, B, and C form an arithmetic sequence. The largest integer that divides all numbers of the form ABCABC is

(a) 11 (b) 101 (c) 1001 (d) 3003

32) In the A.P. 2, 5, 8 upto 50 terms, & 3, 5, 7, 9 upto 60 terms find how many terms are identical in both the series.

A) 25
B) 16
C) 24
D) NoT

33) If $a_1, a_2, a_3, \dots, a_{4001}$ are terms of an A.P. such that

$$\frac{1}{a_1 \cdot a_2} + \frac{1}{a_2 \cdot a_3} + \dots + \frac{1}{a_{4000} \cdot a_{4001}} = 10$$

and

$$a_2 + a_{4000} = 50,$$

then find the value of $|a_1 - a_{4001}|$.

34) The nth term of the sequence 4, 14, 30, 52, 80, 114, is

a) $n^2 + n + 2$ b) $(3 \cdot n^2) + n$ c) $3 \cdot n^2 - 5n + 2$ d) $(n+1)^2$

35) $x^{(1/2)} * x^{(1/4)} * (x^{1/8}) * (x^{1/16}) \dots \dots \dots$ infinity

a) 0 b) 1 c) x d) infinity

36) Then sum of n terms of an AP is $a \cdot n \cdot (n-1)$. find sum of squares of these terms is

a) $a^2 \cdot n^2 \cdot (n-1)^2$ b) $(a^2/6) \cdot (n) \cdot (n-1) \cdot (2n-1)$
c) $(2 \cdot a^2/3) \cdot (n) \cdot (n-1) \cdot (2n-1)$
d) $(2a^2/3) \cdot (n) \cdot (n+1) \cdot (2n+1)$

37) A gp consists of 2n terms . If sum of the terms occupying the odd places is A and that of terms in even places is B then B/A is

a) independent of a (first term)
b) independent of r (common ratio)
c) independent of a and r
d) dependent of r

38) 288th term of a, b, b, c, c, c, d, d, d, e, e, e, e, is

39) IF $3 + 5a + 7a^2 + \dots \dots \dots$ infinity = $44/9$ Find a

- 40)** if $3 + (3+d)*1/4 + (3+2d)*1/16 + \dots + \infty = 44/9$, find d.
- 41)** if $4*a^2 + 9*b^2 + 16*c^2 = 2*(3ab+6bc+4ca)$, where a,b,c are non zero numbers, then a,b,c are in
a)AP b) GP c) HP d)NOT
- 42)** In the Sequence $\{1\}, \{2,3\}, \{4,5,6\}, \{7,8,9,10\}, \dots$ of sets, the sum of elements in 50th set is
a)62525 b)65255 c)56255 d)55625
- 43)** $\log(x+z) + \log(x-2y+z) = 2*\log(x-z)$, then x,y,z are in
a)AP b)GP c)HP d)Not
- 44)** If a, b and c are all positive numbers and $ab^3c^4 = 6912$, what can be the minimum value of $a + b + c$
- 45)** The sum of the first 100 terms of the series is
 $12 + 2*22 + 32 + 2*42 + 52 + 2*62 + \dots$
a)495000 b)510050 c)550010 d)549000
- 46)** The angles of a convex pentagon are in A.P. Then, which of the following can never be the value of any of its angles?
a. 36° b. 35° c. 34° d. All of these
- 47)** In an increasing Arithmetic Progression, the product of the 5th term and the 6th term is 300. When the 9th term of this A.P. is divided by the 5th term, the quotient is 5 and the remainder is 4. What is the first term of the A.P.?
(a) 12 (b) -40 (c) -16 (d) -5
- 48)** The letters of the English alphabet, in the order A to Z, are made to represent 26 numbers which are in Arithmetic Progression. The sum of the numbers representing A, C and E is 36 while that of A, C, E and G is 60. What is the sum of the numbers representing B, D, F and H?
(a) 96 (b) 66 (c) 72 (d) 84
- 49)** A group of 630 children is arranged in rows for a group photograph session. Each row contains three fewer children than the row in front of it. What number of rows is not possible? [CAT 2006]
1) 3
2) 4
3) 5
4) 6
5) 7
- 50)** The angles of a pentagon are in arithmetic progression. One of the angles, in degrees, must be
1) 108
2) 90
3) 72
4) 54

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