Time-1 hrs.   Subject-Maths   Class-XI   MM.

1.. If a, b, c be in A.P., b, c, d in G.P. & c, d, e in H.P., then a, c, e will be in :

(A) A.P.   (B) G.P.   (C) H.P.   (D) none of these

2. If a, b, c are in H.P., then a, a – c, a – b are in :

(A) A.P.   (B) G.P.   (C) H.P.   (D) none of   these

3. . If three positive numbers a , b, c are in H.P. then simplifies to

(A) $(a – c)^2$ (B) zero   (C) (a – c)   (D) 1

4. The sum $\sum_{r=2}^{\infty} \dfrac{1}{r^2-1}$ is equal to :

(A) 1   (B) 3/4   (C) 4/3   (D) none

5. In a potato race , 8 potatoes are placed 6 metres apart on a straight line, the first being 6 metres from the basket which is also placed in the same line. A contestant starts from the basket and puts one potato at a time into the basket. Find the total distance he must run in order to finish the race.

(A) 420   (B) 210   (C) 432   (D) none

6. If the roots of the cubic $x^3 – px^2 + qx – r = 0$ are in G.P. then

(A) $q^3 = p^3 r$ (B) $p^3 = q^3 r$ (C) pq = r   (D) pr = q

7. . . Along a road lies an odd number of stones placed at intervals of 10 m. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried out the job starting with the stone in the middle, carrying stones in succession, thereby covering a distance of 4.8 km. Then the number of stones is

(A) 15   (B) 29   (C) 31   (D) 35

8. . If $\log_{(5.2^x+1)} 2$; $\log_{(2^{1-x}+1)} 4$ and 1 are in Harmonical Progression then

(A) x is a positive real   (B*) x is a negative real

(C) x is rational which is not integral   (D) x is an integer

9. If a, b, c are in G.P., then the equations, $ax^2 + 2bx + c = 0$ & $dx^2 + 2ex + f = 0$ have a common root, if $\dfrac{d}{a}, \dfrac{e}{b}, \dfrac{f}{c}$, are in :

(A) A.P.   (B) G.P.   (C) H.P.   (D) none

10. If for an A.P. $a_1 , a_2 , a_3 ,.... , a_n ,....$

$a_1 + a_3 + a_5 = – 12$ and $a_1 a_2 a_3 = 8$

then the value of $a_2 + a_4 + a_6$ equals

(A) – 12   *(B) – 16*   *(C) – 18*   *(D) – 21*

11. . Given four positive number in A.P. If 5 , 6 , 9 and 15 are added respectively to these numbers , we get a G.P. , then which of the following holds?

(A) the common ratio of G.P. is 3/2

(B) common ratio of G.P. is 2/3

(C) common difference of the A.P. is 3/2

(D) common difference of the A.P. is 2/3

**12**. Consider an A.P. with first term 'a' and the common difference d. Let S_k denote the sum of

the first K terms. Let $\dfrac{S_{kx}}{S_x}$ is independent of x, then

(A) a = d/2   (B) a = d   (C) a = 2d   (D) none

13. . Concentric circles of radii 1, 2, 3......100 cms are drawn. The interior of the smallest circle is coloured red and the angular regions are coloured alternately green and red, so that no two adjacent regions are of the same colour. The total area of the green regions in sq. cm

is equal to

(A) 1000π (B) 5050π (C) 4950π (D) 5151π
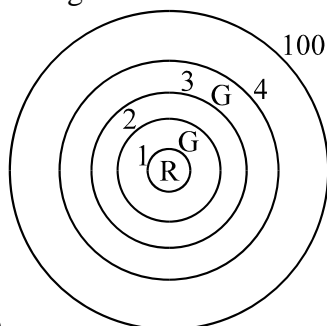
14.. For an increasing A.P. $a_1, a_2, ... a_n$ if $a_1 + a_3 + a_5 = -12 : a_1 a_3 a_5 = 80$ then which of the following does not hold?

(A) $a_1 = -10$ (B) $a_2 = -1$ (C) $a_3 = -4$ (D) $a_5 = 2$

15. Consider a decreasing G.P. : $g_1, g_2, g_3, ... g_n ....$ such that $g_1 + g_2 + g_3 = 13$ and

$g_1^2 + g_2^2 + g_3^2$ =91 then which of the following does not hold?

(A) The greatest term of the G.P. is 9.   (B) $3g_4 = g_3$ (C) g_1

= 1   (D) $g_2 = 3$

16. If p , q, r in H.P. and p & r be different having same sign then the roots of the equation $px^2 + qx + r = 0$ are

 (A) real & equal   (B) real & distinct   (C) irrational   (D) imaginary