**MATHEMATICS**

**PAGEMAKER10**

**Pro Series p and c**

Q1. If the angles of a quadrilateral are in A.P whose common difference is 10°, then the angles of a quadrilateral are

(a) 65°, 85°, 95°, 105°

(b) 75°, 85°, 95°, 105°

(c) 65°, 75°, 85°, 95°

(d) 65°, 95°, 105°, 115°

L1Difficulty1

Qtag Mathematics

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Q2. If the sum of first n terms of an A.P be equal to sum of its first m terms then the sum of the first (m+n) terms will be

(a) 0

(b) n

(c) m

(d) m+n

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q3. If p, q, r are in A.P and are positive, the roots of the quadriatic equation px2 + qx + r = 0 are all real for

(a)

(b)

(c) all p and r

(d) no p and r

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q4. The sum of n terms of three A.Ps whose first term 1 and common differences are 1, 2, 3 are S1, S­2, S­3 respectively. The true relation is

(a) S1 + S3 = S­2

(b) S1 + S2 = 2S­2

(c) S1 + S2 = 2S­3

(d) S1 + S2 = S­3

L1Difficulty1

Qtag Mathematics

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Q5. Value of x

 + .................. will be

(a) x =

(b) x =

(c) x =

(d)

L1Difficulty1

Qtag Mathematics

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Q6. The A.M, H.M and G.M between two No. are , 15 and 12 but not necessary in this order. Then H.M, G.M and A.M respectively are

(a) 15, 12,

(b) , 12, 15

(c) 12, 15,

(d) , 15, 12

L1Difficulty1

Qtag Mathematics

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Q7. If a be arithmetic means of b and c and G1, G2 be two geometric mean between them the G13 + G23 is

(a) G1G2a

(b) 2G1G2a

(c) 3G1G2a

(d) none

L1Difficulty1

Qtag Mathematics

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Q8. The sum of n terms of the series ................... is

(a)

(b)

(c)

(d)

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q9. nth term of the series + ................ will be

(a) n2 + 2n + 1

(b)

(c)

(d)

L1Difficulty1

Qtag Mathematics

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Q10. The sum of series + ....................... equals

(a)

(b)

(c)

(d) n – 1

L1Difficulty1

Qtag Mathematics

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**Solutions**

S1. Ans. (b)

Sol.

Suppose A = x° then B = x + 10°

C = x + 20° and D = x + 30°

A + B + C + D = 360

x = 75°

S2. Ans. (a)

Sol.

 {2a + (n – 1).d} = {2a + (m – 1)

2a + (m + n – 1) = 0

Sm + n = (2a + (m + n – 1) = 0

S3. Ans. (a)

Sol.

p, q, r are positive and are in A.P

q =

The roots of px2 + qx + r = 0

q2 4pr

 4pr

p2 + r2 – 14pr 0

S4. Ans. (b)

Sol.

a1 = a2 = a3 = 1 = 1, = 2, = 3

S1 = , S2 = (2n), S3 = (3n – 1)

S1 + S3 = 2S­2

S5. Ans. (d)

Sol.

 ..................

 ..................

 .................a =

 (1 + 2 + ..................a) =

 =

x =

S6. Ans. (b)

Sol.

A.M > G.M > H.M

15 > 12 >

S7. Ans. (b)

Sol.

Put b = 1 and c = 8 so that a = 4.5 and G1 = 2, G2 = 4 now G13 + G23 = 72, b is satisfies this relation.

S8. Ans. (d)

Sol.

Putting n = 1

S =

S9. Ans. (c)

Sol.

Tn =

=

S10. Ans. (d)

Sol.

 + .....................

 + .................

S = n – 1

**LEVEL-II**

Q1. If tan , then the different value of will be in

(a) A.P.

(b) G.P.

(c) H.P.

(d) None of these

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q2. The sum of integers from 1 to 100 that the divisible by 2 or 5 is

(a) 3000

(b) 3050

(c) 4050

(d) None of these

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q3. If are in A.P., then the value of will be

(a) 3

(b) 7

(c) 5

(d) –2

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q4. If the sum of terms of an A.P. is , where are constants, then its common difference will be

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q5. The 9th term of the series …….. will be

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q6. In a geometric progression consisting of positive terms, each term equals the sum of the next two terms. Then the common ratio of this progression equals

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q7. The 20th term of the series …………. will be

(a) 1600

(b) 1680

(c) 420

(d) 840

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q8. If are , and terms of a G.P., then

 is equal to

(a) 1

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q9. The first and last terms of a G.P. are and respectively; being its common ratio; then the number of terms in this G.P. is

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q10. If and are in G.P., then =

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (a)

Sol.

We have

 , putting …………., we get

 , , …......... which are obviously in A.P.

Since common difference .

S2. Ans. (b)

Sol.

The sum of integers from 1 to 100 that the divisible by 2 or 5 = sum of series divisible by 2 + sum of series divisible by 5 – sum of series divisible by 2 and 5.

= ……….. …………

 …………

S3. Ans. (c)

Sol.

 are in A.P.

Therefore

S4. Ans. (d)

Sol.

Given that

Putting …………, we get

……………………………………………………………

Therefore

……………………………………………………………

Hence the sequence is …………….

Here and common difference

S5. Ans. (a)

Sol.

Given series ……….

 ………. +………..

Hence term of given series

So, .

S6. Ans. (d)

Sol.

Given

S7. Ans. (b)

Sol.

The given series …… terms

Putting we get

S8. Ans. (a)

Sol.

S9. Ans. (d)

Sol.

S10. Ans. (c)

Sol.

Obviously

**LEVEL-III**

Q1. The fifth term of the H.P., , ………… will be

(a)

(b) 3

(c) 1/10

(d) 10

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q2. If , , , ………….., are in H.P., then …………. will be equal to

(a)

(b)

(c)

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q3. If are in H.P., then the value of expression will be

(a)

(b)

(c)

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q4. The sixth H.M. between 3 and is

(a) 63/120

(b) 63/12

(c) 126/105

(d) 120/63

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q5. If are in H.P., then

(a)

(b)

(c) Both (a) and (b)

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q6. If and are two different positive real numbers, then which of the following relations is true

(a) 2

(b) 2

(c) 2

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q7. Three numbers whose sum is 15 are in A.P. If they are added by 1, 4 and 19 respectively they are in G.P. The numbers are

(a) 2, 5, 8

(b) 26, 5, –16

(c) 2, 5, 8 and 26, 5, –16

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q8. If are in A.P. as well as in G.P., then

(a)

(b)

(c)

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q9. If are in G.P. and are the arithmetic means between and respectively, then is equal to

(a) 0

(b) 1

(c) 2

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q10. If are in A.P. and in G.P., then will be in

(a) A.P.

(b) G.P.

(c) H.P.

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (d)

Sol.

Series, …………… are in H.P. , ……….. will be in A.P.

Now first term and common difference

So, term of the A.P.

Hence term in H.P. is 10.

S2. Ans. (c)

Sol.

Since ……….. are in H.P.

Therefore ....…. will be in A.P.

Which gives ....…. =

 ………..

………………………………

and

Adding these, we get ………

………..………..

 ……(i)

Also term of this A.P. is given by

Substituting this value of in (i)

……….

…………..

S3. Ans. (b)

Sol.

If are in H.P., then

Now,

S4. Ans. (a)

Sol.

Sixth H.M. .

S5. Ans. (c)

Sol.

As are in H.P. So is H.M. between and . Also G.M. between and

Now, so that …...(i)

Again are in H.P. So is H.M. between and .

Therefore ......(ii)

Multiplying (i) and (ii), we get

 or Hence answer (b) is true.

Now A.M. between and

Now as A.M. > H.M. so here ……(iii)

And is H.M. between and …….(iv)

Adding (iii) and (iv), we get

Hence answer (a) is true. So both (a) and (b) are correct.

S6. Ans. (b)

Sol.

We know that

Where is arithmetic mean, is geometric mean and is harmonic mean, then

 or .

S7. Ans. (c)

Sol.

 are three numbers in A.P.

 are in G.P.

 are in G.P.

 81=(6-d)(24+d)

 Numbers are and .

S8. Ans. (d)

Sol.

As given …..(i)

And …..(ii)

Putting in (i), we get .

S9. Ans. (c)

Sol.

Given that are in G.P.

So, …..(i)

 …..(ii)

 …..(iii)

Now

 [

**Trick :** Let then obviously and then

S10. Ans. (b)

Sol.

Given that are in A.P. …..(i)

And …..(ii)

Hence are in G.P. because

.

**Trick :** Take and and check.