**MCQ Multiple Answer**

**1)** Let be an arithmetic progression with and common difference 8. Let be such that and for . Then, which of the following is/are TRUE ?

**[JEE Advanced 2022 Paper 1 Online]**

**A)**

**B)**

**C)**

**D)**

**Numerical Question**

**2)** Let be consecutive terms of an arithmetic progression with common difference , and let be consecutive terms of another arithmetic progression with common difference , where . For each , let be a rectangle with length , width and area . If , then the value of is \_\_\_\_\_\_\_\_\_\_.

**[JEE Advanced 2022 Paper 1 Online]**

**Numerical Question**

**3)** Let a1, a2, a3, .... be a sequence of positive integers in arithmetic progression with common difference 2. Also, let b1, b2, b3, .... be a sequence of positive integers in geometric progression with common ratio 2. If a1 = b1 = c, then the number of all possible values of c, for which the equality 2(a1 + a2 + ... + an) = b1 + b2 + ... + bn holds for some positive integer n, is ...........

**[JEE Advanced 2020 Paper 1 Offline]**

**Numerical Question**

**4)** Let m be the minimum possible value of , where are real numbers for which = 9. Let M be the maximum possible value of , where are positive real numbers for which = 9. Then the value of is ...........

**[JEE Advanced 2020 Paper 1 Offline]**

**Numerical Question**

**5)** Let AP(a; d) denote the set of all the terms of an infinite arithmetic progression with first term a and common difference d > 0. If = AP(a ; d), then a + d equals ..............

**[JEE Advanced 2019 Paper 1 Offline]**

**Numerical Question**

**6)** Let X be the set consisting of the first 2018 terms of the arithmetic progression 1, 6, 11, ...., and Y be the set consisting of the first 2018 terms of the arithmetic progression 9, 16, 23, .... . Then, the number of elements in the set X Y is .........

**[JEE Advanced 2018 Paper 1 Offline]**

**Numerical Question**

**7)** The sides of a right angled triangle are in arithmetic progression. If the triangle has area 24, then what is the length of its smallest side?

**[JEE Advanced 2017 Paper 1 Offline]**

**MCQ Single Answer**

**8)** Let bi > 1 for I = 1, 2, ......, 101. Suppose logeb1, logeb2, ......., logeb101 are in Arithmetic Progression (A.P.) with the common difference loge2. Suppose a1, a2, ......, a101 are in A.P. such that a1 = b1 and a51 = b51. If t = b1 + b2 + .... + b51 and s = a1 + a2 + ..... + a51, then

**[JEE Advanced 2016 Paper 2 Offline]**

**A)** s > t and a101 > b101

**B)** s > t and a101 < b101

**C)** s < t and a101 > b101

**D)** s < t and a101 < b101

**Numerical Question**

**9)** The coefficient of in the expansion of (1 + x) (1 + (1 + ) .... is

**[JEE Advanced 2015 Paper 2 Offline]**

**Numerical Question**

**10)** Suppose that all the terms of an arithmetic progression (A.P) are natural numbers. If the ratio of the sum of the first seven terms to the sum of the first eleven terms is 6 : 11 and the seventh term lies in between 130 and 140, then the common difference of this A.P. is

**[JEE Advanced 2015 Paper 2 Offline]**

**Numerical Question**

**11)** Let a, b, c be positive integers such that is an integer. If a, b, c are in geometric progression and the arithmetic mean of a, b, c is b + 2, then the value of is

**[JEE Advanced 2014 Paper 1 Offline]**

**Numerical Question**

**12)** A pack contains cards numbered from to Two consecutive numbered cards are removed from the pack and the sum of the numbers on the remaining cards is If the smaller of the numbers on the removed cards is then

**[JEE Advanced 2013 Paper 1 Offline]**

**Numerical Question**

**13)** A pack contains n cards numbered from 1 to n. Two consecutive numbered cards are removed from the pack and the sum of the numbers on the remaining cards in 1224. If the smaller of the numbers on the removed cards is k, then k - 20 =

**[JEE Advanced 2013 Paper 1 Offline]**

**MCQ Multiple Answer**

**14)** Let Then can take value(s)

**[JEE Advanced 2013 Paper 1 Offline]**

**A)** 1056

**B)** 1088

**C)** 1120

**D)** 1332

**MCQ Single Answer**

**15)** Let be in harmonic progression with and The least positive integer for which is

**[IIT-JEE 2012 Paper 2 Offline]**

**A)** 22

**B)** 23

**C)** 24

**D)** 25

**Numerical Question**

**16)** Let , , ........ be an arithmetic progression with = 3 and . For any integer n with , let m = 5n. If does not depend on n, then is

**[IIT-JEE 2011 Paper 1 Offline]**

**Numerical Question**

**17)** Let ......, be real numbers satisfying . if , then the value of is equal to

**[IIT-JEE 2010 Paper 2 Offline]**

**Numerical Question**

**18)** Let = 1, 2,....., 100, denote the sum of the infinite geometric series whose first term is and the common ratio is . Then the value of is

**[IIT-JEE 2010 Paper 1 Offline]**

**MCQ Single Answer**

**19)** If the sum of first terms of an A.P. is , then the sum of squares of these terms is

**[IIT-JEE 2009 Paper 2 Offline]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**20)** Suppose four distinct positive numbers are in G.P. Let .  
 STATEMENT-1: The numbers are neither in A.P. nor in G.P. and   
 STATEMENT-2: The numbers are in H.P.

**[IIT-JEE 2008 Paper 2 Offline]**

**A)**   
 STATEMENT-1 is True, STATEMENT-2 is True;  
  
 STATEMENT-2 is a correct explanation for   
  
 STATEMENT-1

**B)**   
 STATEMENT-1 is True, STATEMENT-2 is True;  
  
 STATEMENT-2 is NOT a correct explanation for   
  
 STATEMENT-1

**C)** STATEMENT-1 is True, STATEMENT-2 is False

**D)** STATEMENT-1 is False, STATEMENT-2 is True

**MCQ Multiple Answer**

**21)** Let and for Then,

**[IIT-JEE 2008 Paper 1 Offline]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**22)** Let , , denote the arithmetic, geometric and harmonic means, respectively, of two distinct positive numbers. For have arithmetic, geometric and harminic means as repectively.   
 Which one of the following statements is correct ?

**[IIT-JEE 2007]**

**A)**

**B)**

**C)**

**D)**  and

**MCQ Single Answer**

**23)** Let denote the sum of first r terms of an arithmetic progression (A.P.) whose first term is r and the common difference is (2r-1). Let   
 Which one of the following is a correct statement?

**[IIT-JEE 2007]**

**A)**  are A.P. with common difference 5

**B)**  are A.P. with common difference 6

**C)**  are A.P. with common difference 11

**D)**

**MCQ Single Answer**

**24)** Let , , denote the arithmetic, geometric and harmonic means, respectively, of two distinct positive numbers. For have arithmetic, geometric and harminic means as repectively.  
 Which one of the following statements is correct ?

**[IIT-JEE 2007]**

**A)**

**B)**

**C)**  and

**D)**  and

**MCQ Single Answer**

**25)** Let , , denote the arithmetic, geometric and harmonic means, respectively, of two distinct positive numbers. For denote the arithmetic, geometric and harmonic means, respectively, of two distinct positive numbers. For have arithmetic, geometric and harmonic means as have arithmetic, geometric and harminic means as repectively.  
 Which one of the following statements is correct?

**[IIT-JEE 2007]**

**A)**

**B)**

**C)**  and

**D)**  and

**MCQ Single Answer**

**26)** Let denote the sum of first r terms of an arithmetic progression (A.P.) whose first term is r and the common difference is (2r-1). Let   
 is always

**[IIT-JEE 2007]**

**A)** an odd number

**B)** an even number

**C)** a prime number

**D)** a composite number

**MCQ Single Answer**

**27)** Let denote the sum of first r terms of an arithmetic progression (A.P.) whose first term is r and the common difference is (2r-1). Let   
 The sum + +...+ is

**[IIT-JEE 2007]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**28)** In the quadratic equation and are in G.P. where are the root of then

**[IIT-JEE 2005 Screening]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**29)** An infinite G.P. has first term '' and sum '', then belongs to

**[IIT-JEE 2004 Screening]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**30)** Suppose are in A.P. and are in G.P. If and then the value of is

**[IIT-JEE 2002 Screening]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**31)** Let the positive numbers be in A.P. Then are

**[IIT-JEE 2001 Screening]**

**A)** NOT in A.P./GP./H.P.

**B)** inA.P.

**C)** in GP.

**D)** in H.P.

**MCQ Single Answer**

**32)** If the sum of the first terms of the A.P. is equal to the sum of the first terms of the A.P. then equals

**[IIT-JEE 2001 Screening]**

**A)** 10

**B)** 12

**C)** 11

**D)** 13

**MCQ Single Answer**

**33)** Let , be the roots of and be the roots of If are in G.P., then the integral values of and respectively, are

**[IIT-JEE 2001 Screening]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**34)** Consider an infinite geometric series with first term a and common ratio . If its sum is 4 and the second term is 3/4, then

**[IIT-JEE 2000 Screening]**

**A)**

**B)**

**C)**

**D)**

**MCQ Multiple Answer**

**35)** For a positive integer , let   
  
. Then

**[IIT-JEE 1999]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**36)** Let be in and be in H.P. If and then is

**[IIT-JEE 1999]**

**A)** 2

**B)** 3

**C)** 5

**D)** 6

**MCQ Single Answer**

**37)** The harmonic mean of the roots of the equation is

**[IIT-JEE 1999]**

**A)** 2

**B)** 4

**C)** 6

**D)** 8

**MCQ Single Answer**

**38)** If are in G.P., then are in

**[IIT-JEE 1998]**

**A)** A.P.

**B)** H.P.

**C)** G.P.

**D)** None of these

**MCQ Single Answer**

**39)** Let be the term of an A.P., for If for some positive integers , we have   
  
 and then equals

**[IIT-JEE 1998]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**40)** Let be an odd integer. If for every value of then

**[IIT-JEE 1998]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**41)** If are in A.P., then

**[IIT-JEE 1994]**

**A)**  are in A.P.

**B)**  are in A.P.

**C)**  are in G.P.

**D)**  are in H.P.

**MCQ Multiple Answer**

**42)** For if   
  
 then

**[IIT-JEE 1993]**

**A)**

**B)**

**C)**

**D)**

**Numerical Question**

**43)** If are in arithmetic progression, determine the value of x.

**[IIT-JEE 1990]**

**MCQ Single Answer**

**44)** The number is

**[IIT-JEE 1990]**

**A)** an integer

**B)** a rational number

**C)** an irrational number

**D)** a prime number

**MCQ Multiple Answer**

**45)** If the first and the st terms of an A.P., a G.P. and an H.P. are equal and their -th terms are and respectively, then

**[IIT-JEE 1988]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**46)** Sum of the first n terms of the series is equal to

**[IIT-JEE 1988]**

**A)**

**B)**

**C)**

**D)**

**MCQ Single Answer**

**47)** If are in GP., then the equations and have a common root if are in \_\_\_\_\_\_\_\_.

**[IIT-JEE 1985]**

**A)** A.P.

**B)** GP.

**C)** H.P.

**D)** none of these

**MCQ Single Answer**

**48)** The rational number, which equals the number with recurring decimal is

**[IIT-JEE 1983]**

**A)**

**B)**

**C)**

**D)** none of these

**MCQ Single Answer**

**49)** If and are , and terms respectively of an A.P. and also of a G.P., then is equal to :

**[IIT-JEE 1982]**

**A)**

**B)**

**C)**

**D)** None of these

**MCQ Single Answer**

**50)** The third term of a geometric progression is 4. The product of the first five terms is

**[IIT-JEE 1982]**

**A)** 43

**B)** 45

**C)** 44

**D)** none of these