

## 19

## Sequence and Series

- What term of a series  $\frac{1}{4}, -\frac{1}{4}, 1, \dots$  is  $-128$ ?  
 (A) 9<sup>th</sup> (B) 10<sup>th</sup>  
 (C) 11<sup>th</sup> (D) 12<sup>th</sup>
- What is the sum of  $\sqrt{3} + \frac{1}{\sqrt{3}} + \frac{1}{3\sqrt{3}} + \dots$ ?  
 (A)  $\frac{\sqrt{3}}{2}$  (B)  $\frac{3\sqrt{3}}{2}$   
 (C)  $\frac{2\sqrt{3}}{2}$  (D)  $\sqrt{3}$
- The value of  $0.4\ 2\ 3$  is  
 (A)  $\frac{419}{990}$  (B)  $\frac{419}{999}$   
 (C)  $\frac{417}{990}$  (D)  $\frac{417}{999}$
- If the  $p$ th term of an AP be  $q$  and  $q$ th term be  $p$ , then its  $r$ th term of an AP will be  
 (A)  $p + q + r$  (B)  $p + q - r$   
 (C)  $p + r - q$  (D)  $p - q - r$
- The interior angles of a polygon are in AP. If the smallest angle be  $120^\circ$  and the common difference be  $5$ , then the number of side is  
 (A) 8 (B) 10  
 (C) 9 (D) 6
- If the sum of first 10 terms of an arithmetic progression with first term  $p$  and common difference  $q$ , is 4 times the sum of the first 5 terms, then what is the ratio of  $p : q$ ?  
 (A) 1 : 2 (B) 1 : 4  
 (C) 2 : 1 (D) 4 : 1
- The sum of an infinite geometric progression is 6. If the sum of the first two terms is  $\frac{9}{2}$ , then what is the first term?  
 (A) 1 (B)  $\frac{5}{2}$   
 (C) 3 or  $\frac{3}{2}$  (D) 3 or 9
- If the sum of the roots of the equation  $ax^2 + bx + c = 0$  be equal to the sum of the reciprocals of their squares, then  $bc^2$ ,  $ca^2$  and  $ab^2$  will be in  
 (A) AP (B) GP  
 (C) HP (D) None of these
- The 59th term of an AP is 449 and the 449th term is 59. Which term is equal to 0 (zero)?  
 (A) 501<sup>st</sup> term  
 (B) 502<sup>nd</sup> term  
 (C) 508<sup>th</sup> term  
 (D) 509<sup>th</sup> term
- If  $x$ ,  $2x + 2$  and  $3x + 3$  are the first three terms of a GP, then what is its fourth term?  
 (A)  $-\frac{27}{2}$  (B)  $\frac{27}{2}$   
 (C)  $-\frac{33}{2}$  (D)  $\frac{33}{2}$
- Which term of the sequence  $20, 19\frac{1}{4}, 18\frac{1}{2}, 17\frac{3}{4}, \dots$ , is the first negative term?  
 (A) 27<sup>th</sup> (B) 28<sup>th</sup>  
 (C) 29<sup>th</sup> (D) No such term exists

12. In an AP, the  $m$ th term is  $\frac{1}{n}$  and  $n$ th term is  $\frac{1}{m}$ . What is its  $(mn)$ th term?
- (A)  $\frac{1}{(mn)}$                       (B)  $\frac{m}{n}$
- (C)  $\frac{n}{m}$                               (D) 1
13. If  $G$  be the geometric mean of  $x$  and  $y$ , then  $\frac{1}{G^2 - x^2} + \frac{1}{G^2 - y^2}$  is equal to
- (A)  $G^2$                               (B)  $\frac{1}{G^2}$
- (C)  $\frac{2}{G^2}$                               (D)  $3G^2$
14. If  $n$  geometric means be inserted between  $a$  and  $b$ , then the  $n$ th geometric mean will be
- (A)  $a\left(\frac{b}{a}\right)^{\frac{n}{n-1}}$                       (B)  $a\left(\frac{b}{a}\right)^{\frac{n-1}{n}}$
- (C)  $a\left(\frac{b}{a}\right)^{\frac{n}{n+1}}$                       (D)  $a\left(\frac{b}{a}\right)^{\frac{1}{n}}$
15. If  $a^{1/x} = b^{1/y} = c^{1/z}$  and  $a$ ,  $b$  and  $c$  are in GP, then  $x$ ,  $y$  and  $z$  will be in
- (A) AP                                  (B) GP
- (C) HP                                  (D) None of these
16. If the arithmetic mean of two numbers be  $A$  and geometric mean be  $G$ , then the numbers will be
- (A)  $A \pm (A^2 - G^2)$
- (B)  $\sqrt{A} \pm \sqrt{A^2 - G^2}$
- (C)  $A \pm \sqrt{(A+G)(A-G)}$
- (D)  $\frac{A \pm \sqrt{(A+G)(A-G)}}{2}$
17. The  $n$ th term of the series  $\frac{1^3}{1} + \frac{1^3 + 2^3}{1+3} + \frac{1^3 + 2^3 + 3^3}{1+3+5} + \dots$  will be
- (A)  $n^2 + 2n + 1$                       (B)  $\frac{n^2 + 2n + 1}{8}$
- (C)  $\frac{n^2 + 2n + 1}{4}$                               (D)  $\frac{n^2 - 2n + 1}{4}$
18. What is the 15<sup>th</sup> term of the series 3, 7, 13, 21, 31, 43...
- (A) 205                                  (B) 225
- (C) 238                                  (D) 241
19. If the AM and GM of two numbers are 5 and 4 respectively, then what is the HM of those numbers?
- (A)  $\frac{5}{4}$                                       (B)  $\frac{16}{5}$
- (C)  $\frac{9}{2}$                                       (D) 9
20. If  $a$ ,  $b$  and  $c$  be in GP, then  $\log a^n$ ,  $\log b^n$  and  $\log c^n$  will be in
- (A) AP                                  (B) GP
- (C) HP                                  (D) None of these