DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :4**

Topic :-SEQUENCES AND SERIES

1. If H_1,H_2 are two harmonic means between two positive numbers $a$and b $(a \neq b)$, A and G are the arithmetic and geometric means between a and b, then $\frac{H_2+H_1}{H_2H_1}$ is

a) $\frac{A}{G}$ b) $\frac{2A}{G}$ c) $\frac{A}{2G^2}$ d) $\frac{2A}{G^2}$

2. If the sum of n terms of the series $704+\frac{1}{2}(704)+\frac{1}{4}(704)+\ldots$and,$1984-\frac{1}{2}(1984)+\frac{1}{4}(1984)\ldots$ are equal, then $n=$

a) 5 b) 3 c) 4 d) 10

3. The sum of series $1+\frac{3}{2}+\frac{7}{4}+\frac{15}{8}+\frac{31}{16}+\ldots$ is equal to

a) $2(n-1)+\frac{1}{2^{n-1}}$ b) $2n-\frac{1}{2^n}$ c) $2+\frac{1}{2^n}$ d) $2n-1+\frac{1}{2^n}$

4. If x,y,z are in HP, then $\log(x+z)+\log(x-2y+z)$ is equal to

a) $\log(x-z)$ b) $2\log(x-z)$ c) $3\log(x-z)$ d) $4\log(x-z)$

5. In a geometric progression (GP) the ratio of the sum of the first three terms and first six terms is 125:152 the common ratio is

a) $\frac{1}{5}$ b) $\frac{2}{5}$ c) $\frac{4}{5}$ d) $\frac{3}{5}$

6. The sum of n terms of the following series $1+(1+x)+(1+x+x^2)+\ldots$ is

a) $\frac{1-x^n}{1-x}$ b) $\frac{x(1-x^n)}{1-x}$ c) $\frac{n(1-x)-x(1-x^n)}{(1-x)^2}$ d) None of these

7. If a, b, c are in GP and $\log a-\log 2b$, $\log 2b$, $\log 2b-\log 3c$ and $\log 3c-\log a$ are in AP, then a, b, c are the length of the sides of a triangle which is

a) Acute angled b) Obtuse angled c) Right angled d) Equilateral

8. The sum of the series $\frac{2}{3}+\frac{8}{9}+\frac{26}{27}+\frac{80}{81}+\ldots$to n terms is

a) $n-\frac{1}{2}(3^{-n}-1)$ b) $n-\frac{1}{2}(1-3^{-n})$ c) $n+\frac{1}{2}(3^n-1)$ d) $n-\frac{1}{2}(3^n-1)$

9. $\sum_{n=0}^{\infty}\frac{(\log_e x)^n}{n\,!}$is equal to

a) $\log_e x$ b) x c) $\log_x e$ d) None of these

10. If S is the sum of an infinite GP, the first term a, then the common ratio r is given by
a) $\frac{a-S}{S}$ b) $\frac{S-a}{S}$ c) $\frac{a}{1-S}$ d) $\frac{S-a}{a}$

11. The sum of the series $\sum_{n=1}^{\infty} \frac{2n}{(2n+1)!}$, is
a) e b) e^{-1} c) $2e$ d) $2e^{-1}$

12. The sum of the series $1 + 3x + 6x^2 + 10x^3 + \ldots\infty$ will be
a) $\frac{1}{(1-x)^2}$ b) $\frac{1}{1-x}$ c) $\frac{1}{(1+x)^2}$ d) $\frac{1}{(1-x)^3}$

13. $\frac{1}{n!} + \frac{1}{2!(n-2)!} + \frac{1}{4!(n-4)!} + \ldots\infty$is
a) $\frac{2^{n-1}}{n!}$ b) $\frac{2^n}{(n+1)!}$ c) $\frac{2^n}{n!}$ d) $\frac{2^{n-2}}{(n-1)!}$

14. The sum of 11 terms of an A.P. whose middle term is 30, is
a) 320 b) 330 c) 340 d) 350

15. If $(2.3)^x = (0.23)^y = 1000$, then $\frac{1}{x} - \frac{1}{y}$ equals to
a) $\frac{1}{5}$ b) $\frac{1}{4}$ c) $\frac{1}{3}$ d) $\frac{1}{2}$

16. In a G.P. if the $(m+n)^{\text{th}}$ term is p and $(m-n)^{\text{th}}$ term is q, then its m^{th} term is
a) 0 b) pq c) $\sqrt{pq}$ d) $\frac{1}{2}(p+q)$

17. If $\log_6(x+3) - \log_6 x = 2$, then $x =$
a) $\frac{1}{35}$ b) $\frac{3}{35}$ c) $\frac{2}{35}$ d) $-\frac{3}{35}$

18. Sum of n terms of the series $\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \ldots$ is
a) 2^{-n} b) $2^{-n}(n-1)$ c) $2^n(n-1)+1$ d) $2^{-n} + n - 1$

19. 7th term of an AP is 40. Then, the sum of first 13 terms is
a) 520 b) 53 c) 2080 d) 1040

20. The sum of n terms of two arithmetic progressions are in the ratio $2n+3 : 6n+5$, then the ratio of their 13th terms is
a) 53 :155 b) 27 :87 c) 29 :83 d) 31 :89