DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth | **SUBJECT : MATHS**
DATE : | **DPP NO. :1**

Topic :-SEQUENCES AND SERIES

1. If $p, q, r, s \in N$ and they are four consecutive terms of an A.P., then pth, qth, rth and sth terms of a G.P. are in
   a) A.P. b) G.P. c) H.P. d) None of these

2. $\frac{\frac{1}{2}\cdot\frac{2}{2}}{1^3}+\frac{\frac{2}{2}\cdot\frac{3}{2}}{1^3+2^3}+\frac{\frac{3}{2}\cdot\frac{4}{2}}{1^3+2^3+3^3}+\ldots+n$terms equals
   a) $\left(\frac{n}{n+1}\right)^2$ b) $\left(\frac{n}{n+1}\right)^3$ c) $\left(\frac{n}{n+1}\right)$ d) $\left(\frac{1}{n+1}\right)$

3. If $a_1, a_2, a_3, \ldots, a_n$ are in AP, where $a_i > 0$ for all i, then value of $\frac{1}{\sqrt{a_1}+\sqrt{a_2}}+\frac{1}{\sqrt{a_2}+\sqrt{a_3}}+\ldots+\frac{1}{a_{n-1}+\sqrt{a_n}}$ is equal to
   a) $\frac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$ b) $\frac{n+1}{\sqrt{a_1}+\sqrt{a_n}}$ c) $\frac{n-1}{\sqrt{a_1}-\sqrt{a_n}}$ d) $\frac{n+1}{\sqrt{a_1}-\sqrt{a_n}}$

4. If $y = 2x^2 - 1$, then $\frac{1}{x^2}+\frac{1}{2x^4}+\frac{1}{3x^6}+\cdots\infty$ equals to
   a) $\log_e\left(\frac{y+1}{y-1}\right)$ b) $\log_e\left(\frac{1+y}{1-y}\right)$ c) $\log_e\left(\frac{1-y}{1+y}\right)$ d) $\log\left(\frac{1+2y}{1-2y}\right)$

5. The interior angles of a polygon are in AP. If the smallest angle be $120°$ and the common difference be 5, then the number of side is
   a) 8 b) 10 c) 9 d) 6

6. If $\log_x(4x^{\log_5 x}+5) = 2\log_5 x$, then x equals to
   a) 4, 5 b) $-1, 5$ c) $4, -1$ d) $5, \frac{1}{5}$

7. Let a, b, c be in AP. If $0 < a, b, c < 1$, $x = \sum_{n=0}^{\infty} a^n$, $y = \sum_{n=0}^{\infty} b^n$ and $z = \sum_{n=0}^{\infty} c^n$, then
   a) $2y = x + z$ b) $2x = y + z$ c) $2z = x + y$ d) $2xz = xy + yz$

8. If $x^{\frac{3}{2}(\log_2 x-3)} = \frac{1}{8}$, then x equals to
   a) 2 b) 3 c) 5 d) 6

9. If every terms of a GP with positive terms is the sum of its two previous terms, then the common ratio of the series is
   a) 1 b) $\frac{2}{\sqrt{5}}$ c) $\frac{\sqrt{5}-1}{2}$ d) $\frac{\sqrt{5}+1}{2}$

10. If $n_1, n_2, n_3, \ldots, n_{100}$ are positive real numbers such that $n_1 + n_2 + n_3+\ldots+n_{100} = 20$
And $k = n_1(n_2 + n_3 + n_4)(n_5 + n_6+\ldots+n_9)(n_{10}+\ldots+n_{16}) \ldots (..+n_{100})$, then k belongs to
   a) (0, 100] b) (0, 128] c) [0, 144] d) None of these

11. If a, b, c are in AP, then the straight line $ax + by + c = 0$ will always pass through the point

a) $(-1,-2)$ b) $(1,-2)$ c) $(-1,2)$ d) $(1,2)$

12. If $\frac{e^x}{1-x}=B_0+B_1x+B_2x^2+\cdots+B_nx^n+\cdots$, then B_n-B_{n-1} equals
a) $\frac{1}{n\,!}$ b) $\frac{1}{(n-1)\,!}$ c) $\frac{1}{n\,!}-\frac{1}{(n-1)\,!}$ d) 1

13. If $\frac{a+bx}{a-bx}=\frac{b+cx}{b-cx}=\frac{c+dx}{c-dx}(x\neq 0)$, then a,b,c,d are in
a) AP b) GP c) HP d) None of these

14. If $\sum_{r=1}^{\infty}\frac{1}{(2r-1)^2}=\frac{\pi^2}{8}$, then $\sum_{r=1}^{\infty}\frac{1}{r^2}$ is equal to
a) $\frac{\pi^2}{24}$ b) $\frac{\pi^2}{3}$ c) $\frac{\pi^2}{6}$ d) None of these

15. Jairam purchased a house in Rs 15000 and paid Rs 5000 at once. Rest money he promised to pay in annual installment of Rs 1000 with 10% per annum interest. How much money is to be paid by Jairam?
a) Rs 21555 b) Rs 20475 c) Rs 20500 d) Rs 20700

16. If a,b,c are in A.P., then $a+\frac{1}{bc},b+\frac{1}{ca},c+\frac{1}{ab}$ are in
a) A.P. b) G.P. c) H.P. d) None of these

17. The sum of the series
$\frac{12}{2\,!}+\frac{28}{3\,!}+\frac{50}{4\,!}+\frac{78}{5\,!}+\cdots$, is
a) e b) $3e$ c) $4e$ d) $5e$

18. The sum of the series $\frac{1}{2}x^2+\frac{2}{3}x^3+\frac{3}{4}x^4+\frac{4}{5}x^5+\cdots$ is
a) $\frac{x}{1+x}+\log\,(1+x)$ b) $\frac{x}{1-x}+\log\,(1-x)$ c) $-\frac{x}{1+x}+\log\,(1+x)$ d) None of these

19. The sum of the infinite series $\left(\frac{1}{3}\right)^2+\frac{1}{3}\left(\frac{1}{3}\right)^4+\frac{1}{5}\left(\frac{1}{3}\right)^6+\cdots$ is
a) $\frac{1}{4}\log_e 2$ b) $\frac{1}{2}\log_e 2$ c) $\frac{1}{6}\log_e 2$ d) $\frac{1}{4}\log_e\frac{3}{2}$

20. Let T_r, be rth term of an AP whose first term is a and common difference is d. If for some positive integers $m,n,m\neq n,T_m=\frac{1}{n}$ and $T_n=\frac{1}{m}$, then $a-d$ equals
a) 0 b) 1 c) $\frac{1}{mn}$ d) $\frac{1}{m}+\frac{1}{n}$