DPP -1 (A.P)

1. In a certain A.P., 5 times the 5^{th} term is equal to 8 times the 8^{th} term, then its 13^{th} term is

(a) 0 (b) - 1 (c) - 12 (d) - 13

2. If 7^{th} and 13^{th} term of an A.P. be 34 and 64 respectively, then its 18^{th} term is

(a) 87 (b) 88 (c) 89 (d) 90

3. If $<a_n>$ is an arithmetic sequence, then $\Delta = \begin{vmatrix} a_m & a_n & a_p \\ m & n & p \\ 1 & 1 & 1 \end{vmatrix}$ equals

(a) 1 (b) -1 (c) 0` (d) None of these

4. 7^{th} term of an A.P. is 40, then the sum of first 13 terms is

(a) 53 (b) 520 (c) 1040 (d) 2080

5. The first term of an A.P. is 2 and common difference is 4. The sum of its 40 terms will be

(a) 3200 (b) 1600 (c) 200 (d) 2800

6. The sum of the first and third term of an A.P. is 12 and the product of first and second term is 24, the first term is

(a) 1 (b) 8 (c) 4 (d) 6

7. If S_r denotes the sum of the first *r* terms of an A.P., then $\frac{S_{3r}-S_{r-1}}{S_{2r}-S_{2r-1}}$ is equal to

(a) $2r - 1$ (b) $2r + 1$ (c) $4r + 1$ (d) $2r + 3$

8. If the sum of the first $2n$ terms of 2, 5, 8…. is equal to the sum of the first *n* terms of 57, 59, 61…., then *n* is equal to

(a) 10 (b) 12 (c) 11 (d) 13

9. If the sum of the 10 terms of an A.P. is 4 times to the sum of its 5 terms, then the ratio of first term and common difference is

(a) 1 : 2 (b) 2 : 1 (c) 2 : 3 (d) 3 : 2

10. If the sum of first *p* terms, first *q* terms and first *r* terms of an A.P. be *x*, *y* and *z* respectively, then $\frac{x}{p}(q-r)+\frac{y}{q}(r-p)+\frac{z}{r}(p-q)$ is

(a) 0 (b) 2

(c) pqr (d) $\frac{8xyz}{pqr}$

11. The sum of all odd numbers of two digits is
(a) 2475 (b) 2530 (c) 4905 (d) 5049

12. If sum of *n* terms of an A.P. is $3n^2+5n$ and $T_m = 164$, then *m* =
(a) 26 (b) 27 (c) 28 (d) None of these

13. The sum of *n* terms of the series $\frac{1}{1+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{7}}+.......$ is
(a) $\sqrt{2n+1}$ (b) $\frac{1}{2}\sqrt{2n+1}$
(c) $\sqrt{2n-1}$ (d) $\frac{1}{2}(\sqrt{2n+1}-1)$

14. If $a_1, a_2, ..., a_{n+1}$ are in A.P., then $\frac{1}{a_1a_2}+\frac{1}{a_2a_3}+.....+\frac{1}{a_na_{n+1}}$ is
(a) $\frac{n-1}{a_1a_{n+1}}$ (b) $\frac{1}{a_1a_{n+1}}$ (c) $\frac{n+1}{a_1a_{n+1}}$ (d) $\frac{n}{a_1a_{n+1}}$

15. Let a_1, a_2, a_3, ... be terms of an A.P. If $\frac{a_1+a_2+....+a_p}{a_1+a_2+.....+a_q} = \frac{p^2}{q^2}$, $p \neq q$, then $\frac{a_6}{a_{21}}$ equals-
(a) 41/11 (b) 7/2 (c) 2/7 (d) 11/41

16. If the sixth term of an A.P. is equal to 2. the value of the common difference of the A.P. which makes the product $a_1 a_4 a_5$ the greatest is (the i^{th} term is denoted by a)
(a) $\frac{8}{5}$ (b) 3 (c) 2 (d) $\frac{4}{5}$

17. The ratio of the sum of n terms of the two A.P's. be $\frac{7n+1}{4n+27}$ and ratio of 11th term is λ then value of $111 \times \lambda$ is-
(a) 138 (b) 128 (c) 122 (d) 148

18. If 11 A.M.'s are inserted between 28 and 10, then number of integral A.M's is-

(a) 5 (b) 6 (c) 7 (d) 8

19. If the ratio of sums to n terms of two A.P.' s is (5n + 7) : (3n + 2), then the ratio of their 17^{th} terms is -

(a) 172 : 99 (b) 172 : 101 (c) 175 : 99 (d) 175 : 101

20. n arithmetic means are inserted between the numbers 7 and 49. If the sum of these means be 364 then the sum their squares is -

(a) 10380 (b) 11380 (c) 11830 (d) 18130

21. If $a_1, a_2, a_3 \ldots . a_{2n+1}$ are in A.P. then $\frac{a_{2n+1}-a_1}{a_{2n+1}+a_1} + \frac{a_{2n}-a_2}{a_{2n}+a_2} + \ldots . . \frac{a_{n+2}-a_n}{a_{n+2}+a_n}$

(a) $\frac{n(n+1)}{2} \cdot \frac{a_2-a_1}{a_{n+1}}$ (b) $\frac{n(n+1)}{2}$

(c) $(n+1)(a_2 - a_1)$ (d) None of these

22. Let T_r be *r*th term of an A.P. 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) $\frac{1}{m}+\frac{1}{n}$ (b) 1 c) $\frac{1}{mn}$

23. After inserting *n* A.M.'s between 2 and 38, the sum of the resulting progression is 200. The value of *n* is

(a) 10 (b) 8 (c) 9 (d) None of these

24. 3 A.M.'s between 3 and 19 are

(a) 7, 11, 15 (b) 4, 6, 10

(c) 6, 10, 14 (d) None of these

25. If *a*, *b*, *c*, *d*, *e*, *f* are A.M.'s between 2 and 12, then $a+b+c+d+e+f$ is equal to

(a) 14 (b) 42 (c) 84 (d) None of these

26. If $a_1, a_2, a_3, \ldots , a_{24}$ are in arithmetic progression and $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$, then $a_1 + a_2 + a_3 + \ldots + a_{23} + a_{24} =$

(a) 909 (b) 75 (c) 750 (d) 900

27. Let a_n be the n^{th} term of an A.P. If $\sum_{r=1}^{100} a_{2r} = \alpha$ & $\sum_{r=1}^{100} a_{2r-1} = \beta$, then the common difference of the A.P. is

(a) $\alpha - \beta$ (b) $\beta - \alpha$ (c) $\frac{\alpha-\beta}{2}$ (d) None of these

28. If n- arithmetic means are inserted between 1 and 31 such that the 7^{th} mean : the $(n-1)^{th}$ mean = 5 : 9, then 'n' is equal to (a) 12 (b) 13 (c) 14 (d) None of these

29. If α&β are the roots of the equation, $x^2 - 2px + q = 0$ and γ and δ be those of the equation, $x^2 - 2rx + s = 0$ and if $\alpha, \beta, \gamma, \delta$ be in A.P., then $(s - q)$ is equal to-

(a) $p^2 - r^2$ (b) $p^2 - q^2$ (c) $q^2 - p^2$ (d) $r^2 - p^2$

30. If T_n denotes the n^{th} term of an A.P. and $T_p = \frac{1}{q}$, $T_q = \frac{1}{p}$ then which of the following is necessarily a root of the equation $(p + 2q - 3r) x^2 + (q + 2r - 3p) x + (r + 2p - 3q) = 0$?

(a) T_p (b) T_q (c) T_{pq} (d) T_{p+q}

Answers

1)a 2)c 3)c 4)b 5)a 6)c 7)b 8)c 9)a 10)a 11)a 12)b 13)d 14)d 15)d 16)a 17)d 18)a 19)b 20)c 21)a 22)d 23)b 24)a 25)b 26)d 27)d 28)c 29)d 30)d