1. In a GP of positive terms, any term is equal to one-third of the sum of next two terms. What is the common ratio of the GP?

(a) $\frac{\sqrt{13}+1}{2}$ (b) $\frac{\sqrt{13}-1}{2}$

(c) $\frac{\sqrt{13}+1}{3}$ (d) $\sqrt{13}$

2. Which term of the series $\frac{1}{4}, -\frac{1}{2}, 1, \ldots$ is -128?

(a) 9th (b) 10th

(d) 11th (d) 12th

3. If $\frac{1}{b-a}+\frac{1}{b-c}=\frac{1}{a}+\frac{1}{c}$ then a,b,c are in

(a) AP (b) GP

(c) HP (d) None of these

4. What is the sum of $\sqrt{3}+\frac{1}{\sqrt{3}}+\frac{1}{3\sqrt{3}}+\ldots$?

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{3\sqrt{3}}{2}$

(c) $\frac{2\sqrt{3}}{2}$ (d) $\sqrt{3}$

5. What is the geometric mean of the data 2, 4, 8, 16, 32 ?

(a) 2 (b) 4

(c) 8 (d) 16

6. If $\left(\frac{a^{n+1}+b^{n+1}}{a^n+b^n}\right)$ is the arithmetic mean between unequal numbers a and b, then the value of n is :

(a) 0 (b) 1

(c) 2 (d) 4

7. $x=\left(a+\frac{a}{r}+\frac{a}{r^2}+\ldots\infty\right)$, $y=\left(b-\frac{b}{r}+\frac{b}{r^2}-\ldots\infty\right)$

$c=\left(c+\frac{c}{r}+\frac{c}{r^2}+\ldots\infty\right)$, $\frac{xy}{z}=?$

(a) $\frac{ab}{c}$ (b) $\frac{c}{ab}$ (c) $\left(\frac{c}{a}+\frac{c}{b}\right)$ (d) $c\sqrt{ab}$

8. If the AM and HM of two numbers are 27 and 12 respectively, then what is their GM equal to?

(a) 12 (b) 18

(c) 24 (d) 27

9. If p times the pth term of an AP is q times the qth term, then what is the $(p+q)$th term equal to?

(a) p + q (b) pq

(c) 1 (d) 0

10. Let a,b,c be in AP

Consider the following statements:

1. $\frac{1}{bc}, \frac{1}{ca}, \frac{1}{ab}$ are in AP.

2. $\frac{1}{\sqrt{b}+\sqrt{c}}, \frac{1}{\sqrt{c}+\sqrt{a}}, \frac{1}{\sqrt{a}+\sqrt{b}}$ are in AP.

Which of the statements given above is/are correct?

(a) 1 only

(b)2 only

(c) both 1 and 2

(d) neither 1 nor 2

11. If $1, x, -7$ are in AP. then value of x will be -

(a) 2 (b) -3

(c) 0 (d) None of these

12. What is the 20th term of 9, 5, 1, -3, ...

(a) 27 (b) 45

(c) -45 (d) -67

13. What is the 12th term of 1, 4, 7, 10.....

(a) 30 (b) 32

(c) 34 (d) None of these

14. Which term is the 27th of sequence 5, 7, 9, 11 .....

(a) 10 (b) 12

(c) 14 (d) None of these

15. In an AP is pth term is q and qth term is p then (p + q)th term will be -

(a) $p+q$ (b) $p-q$

(c) pq (d) 0

16. If $(x+1), 3x$ and $(4x+2)$ are in AP then the value of x will be ?

(a) 1 (b) 2

(c) 3 (d) 0

17. There are 60 terms in an AP. The first and last terms of this AP. are 8 and 185. What is the common difference?

(a) 1 (b) 2

(c) 3 (d) 4

18. In AP the pth term is q and qth term is p then what will be its rth term ?

(a) $p+q+r$ (b) $p-q-r$

(c) $p+q-r$ (d) $p-q+r$

19. In an AP. the 6*th* term is 13 and 12*th* term is 25. What will be its 20*th* term ?

(a) 41 (b) 39

(c) 43 (d) 37

20. If the sum of three terms of an AP. is 21 and the multiplication of first and third term is 6 more than the second term then th three terms will be-

(a) 2, 7, 12 (b) 1, 7, 13

(c) 1, 8, 15 (d) None

21. If the m th term of the A.P. is (1/n) and the n th term is (1/m), then its (mn) th term is:

(a) -mn (b) -1

(c) 1 (d) 1/mn

22. If the n th term of a progression is a linear expression in n, then it is

(a) A.P. (b) G.P.

(c) H.P. (d) None

23. Which term of the A.P. $19, 18\frac{1}{5}, 17\frac{2}{5}, \ldots$ is the first negative term?

(a) 20th (b) 23rd

(c) 25th (d) 18th

24. If 18, a, b, -3 are in A.P., then

(a) a =11, b =-4 (b) a =-11, b =4

(c) a =11, b =4 (d) None of these

25. The second and 7th terms of an A.P. are 2 and 22 respectively. The sum of its first 35 terms is:

(a) 2160 (b) 2240

(c) 2310 (d) None of these

26. If $1+6+11+16+\ldots+x=148$, then the value of x is

(a) 8 (b) 36

(c) 42 (d) 48

27. If the sum of n terms of a progression be a quadratic expression in n, then it is

(a) A.P. (b) G.P.

(c) H.P. (d) None

28. The sum of n terms of an A.P. is $(3n^2+2n)$. Its common difference is:

(a) 5 (b) 6

(c) -3 (d) -5

29. If the sum of p terms of an A.P. is the same as the sum of its q terms, then the sum of its (p+q) terms is:

(a) 1 (b) 0

(c) 2(p + q) (d) None

30. If S_1, S_2, S_3 be the sum of n, 2n and 3n terms respectively of an A.P. and $(S_2-S_1)=k\,S_3$, then the value of k is
(a) 1/2 (b) 2
(c) 1/3 (d) 3

31. If $1/4,\ 1/x,\ 1/10$ are in HP, then what is the value of x ?
(a) 5 (b) 6
(c) 7 (d) 8

32. The geometric mean and harmonic mean of two non-negative observations are 10 and 8 respectively. Then what is the arith metic mean of the observation equal to ?
(a) 4 (b) 9
(c) 12.5 (d) 25

33. What is the n^{th} term of the sequence $1, 5, 9, 13, 17, \ldots$?
(a) 2n - 1 (b) 2n + 1
(c) 4n - 3 (d) none of these

34. 5+55+555+.... To 10 terms is
(a) $\frac{5}{81}\times(10^{11}-100)$ (b) $\frac{5}{81}\times(10^{9}-100)$
(c) $\frac{5}{81}\times(10^{9}-91)$ (d) none of these

35. What is the sum of the series
$1-\frac{1}{2}+\frac{1}{4}-\frac{1}{8}+\ldots\ldots\ldots$ equal to ?
(a) 1/2 (b) 3/2
(c) 2 (d) 2/3

36. If the numbers $n-3,\ 4n-2,\ 5n+1$ are in AP, what is the value of n ?
(a) 1 (b) 2
(c) 3 (d) 4

37. If angles A, B, C are in A P, then what is $\sin A+2\sin B+\sin C$ equal to ?
(a) $4\sin B\cos^2\left(\frac{A-C}{2}\right)$
(b) $4\sin B\cos^2\left(\frac{A-C}{4}\right)$
(c) $4\sin(2B)\cos^2\left(\frac{A-C}{2}\right)$
(d) $4\sin(2B)\cos^2\left(\frac{A-C}{4}\right)$

38. The harmonic mean H of two numbers is 4 and the arithmetic mean A and geometric mean G satisfy the equation $2A+G^2=27$. The two numbers are
(a) 6, 3 (b) 9, 5
(c) 12, 7 (d) 3, 1

39. The harmonic of $\frac{a}{(1-ab)}$ and $\frac{a}{(1+ab)}$ is
(a) $\frac{1}{(1-a^2b^2)}$ (b) $\frac{a}{(1-a^2b^2)}$
(c) $\frac{a}{\sqrt{1-a^2b^2}}$ (d) a

40. Which term of the series $\frac{1}{4},\frac{1}{2},1,\ldots$ is 128 ?
(a) 9 th (b) 10 th
(c) 11th (d) 12 th

41. If A, B, C are in AP and $b:c=\sqrt{3}:\sqrt{2}$, then what is the value of $\sin C$?
(a) 1 (b) $\frac{1}{\sqrt{3}}$
(c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{2}}$

42. What is the 10th common term between the series $2+6+10+\ldots\ldots$and $1+6+11+\ldots\ldots$?
(a) 180 (b) 186
(c) 196 (d) 206

43. If $n!,3\times(n!)$ and $(n+1)!$ are in GP, then the value of n will be
(a) 3 (b) 4
(c) 8 (d) 10

44. If a, b, c, d, e, f are in AP, then (e - c) is equal to which one of the following ?
(a) 2(c - a) (b) 2(d - c)
(c) 2(f - d) (d) (d - c)

45. What is the geometric mean of 10, 40 and 60 ?
(a) 10 (b) 20 $(3)^{1/3}$
(c) 40 (d) 70

46. If the arithmetic and geometric means of two numbers are 10, 8 respectively, then one number exceeds the other number by
(a) 8 (b) 10
(c) 12 (d) 16

47. If x^2, y^2, z^2 are in AP, then $y+z, z+x, x+y$ are
(a) in A P
(b) in H P
(c) in G P
(d) neither in A P nor in H P nor in G P

48. The arithmetic mean of two numbers exceeds their geometric mean by 2 and the geometric mean exceeds their har monic mean by 1.6. What are the two numbers ?
(a) 16, 4 (b) 81, 9
(c) 256, 16 (d) 625, 25

49. If the AM and GM between two numbers are in the ratio m:n, then what is the ratio between the two numbers?
(a) $\frac{m+\sqrt{m^2-n^2}}{m-\sqrt{m^2-n^2}}$ (b) $\frac{m+n}{m-n}$
(c) $\frac{m^2-n^2}{m^2+n^2}$ (d) $\frac{m^2+n^2-mn}{m^2+n^2+mn}$

50. In a geometric progression with first term a and common ratio r, what is the arithmetic mean of first five terms?
(a) $a+2r$
(b) ar^2
(c) $a(r^5-1)/(r-1)$
(d) $a(r^5-1)/[5(r-1)]$

ANSWERS

1. b	2. b	3. c	4. b	5. c	6. a	7. a	8. b
9. d	10. c	11. b	12. d	13. c	14. b	15. d	16. c
17. c	18. c	19. a	20. b	21. c	22. a	23. c	24. c
25. c	26. b	27. a	28. b	29. b	30. c	31. c	32. c
33. c	34. a	35. d	36. a	37. b	38. b	39. d	40. b
41. d	42. b	43. c	44. b	45. b	46. c	47. b	48. a
49. a	50. d						