1. Give the first three terms of the sequence $a_n = 2^n - 1$.

(a) 1, 3, 5

(c) 1, 2, 3

(b) 1, 2, 5

(d) 1, 3, 7

2. 1, 1/2, 1/3…… is a sequence. Find the n^{th} term of the sequence.

(a) 1/n

(c) 2n-1

(b) 2n+1

(d) n-1

3. If $(p+1)^{th}$ term of an A.P is twice $(q+1)^{th}$ term, then $(3p+1)^{th}$ term is

(a) $2t_{(p+q)}$

(c) $2t_{(p+q+1)}$

(b) $2t_{(p+1)}$

(d) $2t_{(q+1)}$

4. A man arranges to pay off a debt of $900 in 18 monthly installments of $50 each and interest at the rate of 5% per annum in the 19th installments. Calculate the simple interest that he pays in the 19th installments.

(a) $62.63

(b) $35.63

(c) $13.63

(d) $85.63

5. Solve for "x" : 1+6+11+16+……..+x = 148

(a) 26

(b) 36

(c) 46

(d) 56

6. 10 potatoes are planted in straight line on the ground. The distance between any two consecutive potatoes is 10 meters. How far must a person travel to bring them one by one to a basket placed 10 meters behind the first potato.

(a) 1800

(b) 1100

(c) 1900

(d) 1200

7. 12 cylindrical pillars of a building have to be cleaned, If the diameter of each pillar is 42 cm and the height of each pillar is 5m, what will be the cost of cleaning these at the rate of $5 per sq.m?

(a) $596

(c) $396

(b) $496

(d) $296

8. Find the slant height of the cone whose base radius has the diameter 10 cm and whose height is 12 cm.

(a) 13 cm

(c) 14 cm

(b) 12 cm

(d) 11 cm

9. A sector containing an angle of 90° is cut from a circle of radius 20 cm and folded in to a cone. Find the curved surface area of the cone.

(a) 97π sq.cm

(c) 99π sq.cm

(b) 98π sq.cm

(d) 100π sq.cm

10. A tooth paste company interviewed 141 people in a city. It was found out that 90 people use brand A paste, 80 use brand B paste, 50 use brand C paste, 40 use both A and B, 28 use both B and C, 26 use both C and A, and 15 use all these three pastes. Find how many use (i) A and B not C.

(a) 10

(b) 29

(c) 25

(d) 7

11. Given A = {1, 2, 3} and B={4, 5}, then which of the following elements belong to AxB?

(a) {6, 1}

(b) {2, 7}

(c) {1, 5}

(d) {4, 6}

12. Let f:A→B, where A= {1,2} and (x) = x-1. Write the elements of B.

(a) {0, 1}

(b) {5, 7}

(c) {8, 5}

(d) {3, 6}

13. The difference between simple interest and compound interest for 2 years on a sum of money lent at 20/3 % is $ 14. Find the sum.

(a) $3050

(c) $3200

(b) $3150

(d) $3250

14. A person opens recurring deposit account paying $150 per month for 3 years. If the rate of interest is 12%, what is the amount of interest he gets at the end?

(a) 555

(c) 999

(b) 888

(d) 666

15. Solve: $1/(2x) + 1/(4y) - 1/(3z) = \frac{1}{4}$

$1/x = 1/(3y)$

$1/x - 1/(5y) + 4/z = 32/15$

(a) x = 3, y = 1, z = 2

(c) x = -1, y = 2, z = 3

(b) x = -3, y = 2, z = 1

(d) x = 1, y = 2, z = 2

16. Sum of three numbers is 10. Sum of the first number, twice the second number and three times the third number is 19 and the sum of first, four times the second and nine times the third is 43. Find the numbers.

(a) 4, 3, 2

(b) 4, 4, 1

(c) 4, 3, 1

(d) 4, 3, 3

17. Find the remainder when the polynomial $p(x) = x^4-3x^2+2x+1$ is divided by x-1.

(a) 1

(b) 2

(c) 3

(d) 4

18. If $ax^3+bx^2+ x-6$ has (x+2) as a factor and leaves a remainder 4 when divided by (x-2), find the values of "a" and "b".

(a) a = 2, b = 3

(b) a = 0, b = 2

(c) a = -2, b = 3

(d) a = 0, b = -2

19. Find the H.C.F of (x^3+x^2+x+1) and (x^4-1)

(a) $(x-1)(x^2+1)$

(c) $(x+1)(x^2-1)$

(b) $(x-1)(x^2-1)$

(d) $(x+1)(x^2+1)$

20. Find the L.C.M of $2(x^3+x^2-x-1)$ and $3(x^3+3x^2-x-3)$

(a) $6(x^2+1)(x+1)(x+3)$

(c) $6(x^2+1)(x+1)(x-3)$

(b) $6(x^2-1)(x+1)(x+3)$

(d) $6(x^2+1)(x-1)(x+3)$

21. Find the square root of $(x^4-10x^3+37x^2-60x+36)$

(a) $x^2+24x-5=0$

(c) x^2-5x+6

(b) $x^2-32x+14$

(d) $x^2-6x+2=0$

22. A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hr more, it would have taken 30 minutes less for the journey. Find the original speed of the train.

(a) 45 km/hr

(c) 36 km/hr

(b) 38 km/hr

(d) 21 km/hr

23. Find the value of "k" for which the given equation $9x^2+3kx+4=0$ has real and equal roots.

(a) ± 1

(b) ± 2

(c) ± 3

(d) ± 4

24. If the matrix A is of order mxn and B is of order nxp, what is the order of the product matrix AB?

(a) p

(b) np

(c) mp

(d) m

25. With the vertices of a triangle PQR as centers, three circles are described, each touching the other two externally. If the sides of the triangle are 9cm, 7cm, and 6cm. Find the radii of the circles.

(a) 5 cm, 1cm, 4cm

(b) 5 cm, 2cm, 2cm

(c) 5 cm, 2cm, 3cm

(d) 5 cm, 2cm, 4cm

26. In triangle ABC, AD is the bisector of $\angle A$. If AB = 10 cm, AC = 6 cm, BD = 5 cm. Find DC.

(a) 1

(b) 2

(c) 3

(d) 4

27. Determine the value of "a" such that (a, a), (2, 3) and (4, -1) are collinear.

(a) 7/3

(b) 7/9

(c) 7/5

(d) 7/11

28. Find the slope of the line, given that it makes 60° with x-axis.

(a) $\sqrt{5}$

(b) $\sqrt{2}$

(c) $\sqrt{3}$

(d) $\sqrt{7}$

29. A triangle has vertices at (1, -1), (-1, 1) and (1, 1). Find the slope of the median through C.

(a) 1

(b) 2

(c) 5

(d) 4

30. Find the equation of the line which passes through the point (3, 4) and make intercepts on the axes such that their sum is14.

(a) $x + y - 7 = 0$ (or) $4x + 3y - 24 = 0$

(b) $x + y + 7 = 0$ (or) $4x + 3y + 24 = 0$

(c) $x + y + 7 = 0$ (or) $4x - 3y - 24 = 0$

(d) $x - y - 7 = 0$ (or) $4x + 3y + 24 = 0$

31. Find the value of "a" so that $3x+y=2$, $5x+2y=3$ and $ax-y=3$ are concurrent.

(a) 1

(b) 2

(c) 3

(d) 4

32. In a $\triangle ABC$, the equation of AB is $x-2y+8=0$, BC is $x-3y+10=0$, CA is $x-y+2=0$. Find the centroid of the triangle.

(a) (2/3, 4)

(b) (5/3, 9)

(c) (1/3, 7)

(d) (5/3, 7)

33. Find the value: $\sec\theta(1-\sin\theta)(\sec\theta+\tan\theta)$.

(a) 1

(b) 2

(c) 3

(d) 4

34. SinAcosB + cosAsinB =

(a) sin(A-B)

(b) cos(A-B)

(c) cos(A+B)

(d) sin(A+B)

35. Find the length of a side of a regular polygon inscribed in a circle of radius 1 m if it has 24 sides.

(a) 46.1

(b) 36.1

(c) 26.1

(d) 16.1

36. From a cliff 150 m above the shore line the angle of depression of a ship is 19°30′. Find the distance from the ship to a point on the shore directly below the observer.

(a) 423.59 m

(c) 426.59 m

(b) 436.16 m

(d) 416.16 m

37. A circle has radius 2cm. P is a point at a distance of 4.5 cm from its center. From P two tangents are drawn to the circle (Using the centre). Calculate the lengths of the tangents.

(a) 8.03 cm

(c) 6.03 cm

(b) 4.03 cm

(d) 9.03 cm

38. The scores of a cricketer in 7 matches are70, 80, 60, 50, 40, 90, 95. Find the standard deviation.

(a) 48.98

(c) 28.98

(b) 18.98

(d) 58.98

39. The largest value of a data is 98. If the range of the data is 78, find the smallest value of the data.

(a) 69
(c) 85
(b) 20
(d) 42

40. A number is selected at random from 1 to 100. Find t5he probability that it is not a square number.

(a) 6/79
(c) 8/5
(b) 2/5
(d) 9/10

41. Three coins are tossed together. Find the probability that either only two heads or only two tails turn up.

(a) 6/7
(c) 3/4
(b) 5/2
(d) 9/8

42. A comet is heading for Jupiter with acceleration $a = 50\ km/sec^2$. The velocity of the comet at time "t" is given by $f(t) = at^2-at+1$, then the velocity at time t = 5 seconds is

(a) 1003 km/sec

(b) 1002 km/sec

(c) 1001 km/sec

(d) 1000 km/sec

43. Composition of function is

(a) Associative

(b) Associative & Commutative

(c) Commutative

(d) Not Associative

44. If a number when divided by 296 gives a remainder 75, find the remainder when 37 divides the same number.

(a) 4

(b) 2

(c) 3

(d) 1

45. Find the number of prime factors of $6^{10}x7^{17}x55^{27}$

(a) 13

(c) 86

(b) 91

(d) 31

46. The owner of a restaurant started with an initial investment of $32,000. In the first year of operation, he incurred a loss of 5%. However, during the second and third years of operation, he made a profit of 10% and 12.5% respectively. What is the net profit for the entire period of three years? (Assume that profit or loss are added or deducted from the investment)

(a) $8500

(c) $4880

(b) $3120

(d) $5620

47. If A gives B $4, B will have twice as much as A. If B gives A $15, A will have 10 times as much as B. How much each has originally?

(a) $13, $20

(c) $14, $19

(b) $16, $17

(d) $15, $18

48. 35% of a number is 175. What % of 175 is the number?

(a) 585.71%

(c) 385.71%

(b) 485.71%

(d) 285.71%

49. Find the sum of prime numbers lying between 60 and 75.

(a) 154

(c) 314

(b) 272

(d) 415

50. The ratio of third proportional to 12 & 30 and the mean proportional between 9 & 25 is

(a) 5:1

(c) 3:8

(b) 7:8

(d) 1:3

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