CLASS - X

1) If $2^{x+y}.3^{y+z}.5^{z+x}=360$ then $x^2+y^2+z^2=$
   1) 5 2) 16 3) 3 4) 36

2) $\sin\theta+\sin^2\theta=1$ then $\cos^2\theta+\cos^4\theta+1=$.....
   1) 2 2) 8 3) 3 4) 1

3) If $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is A.M. of a and b then $n^2-5n+3=$.....
   1) 2 2) 3 3) 4 4) 0

4) If $\sqrt{2+\sqrt{3}}+\sqrt{2-\sqrt{3}}=a\sqrt{b}+c$ where a,b $\in$ N then $ax^2+bx+c+2=0$ has difference of roots equal to .....
   1) $2\sqrt{7}$ 2) -5 3) $4\sqrt{7}$ 4) -3

5) If $a^2+b^2+c^2=1$ and $x^2+y^2+z^2=1$ then maximum value of $|ax+by+cz|$ is .....
   1) 4 2) 3 3) 1 4) 2

6) If $1^2-2^2+3^2-4^2+.....+2007^2-2008^2$ is divisible by .....
   1) 37 2) 41 3) 53 4) 97

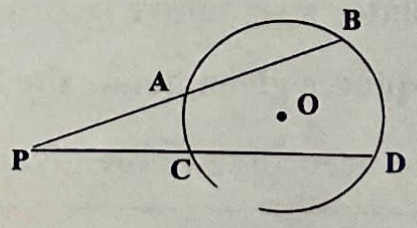
7) Who was popularly known as " Father of Statistics"?
   1) R.A. Fisher 2)A.R.Mohanty 3) P.C.Mahalanobis 4)S. Ramanjan

8) 148th number of the series 1, 3, 6, 10, 15, 21, ...
   1) 12870 2) 11026 3) 21786 4) 27826

9) In the figure given, radius of circle is 2018 units,then

$$\left(\frac{\left(\frac{PA}{PD}\right)}{\left(\frac{PC}{PB}\right)}\right)+\left(\frac{\left(\frac{PB}{PD}\right)}{\left(\frac{PC}{PA}\right)}\right)=.....$$

   1) 2018^2 2) 4
   3) 2017 4) 2



10) In the first 200 natural numbers the number of numbers which are neither divisible by 5 nor 7 nor 11
   1) 124 2) 76 3) 48 4) 100

11) If $3 \sin A + 4 \cos A = a$ then $25 - (4 \sin A - 3 \cos A)^2 =$ .....

1) a^2 2) $a^2 - 25$ 3) $25 - a^2$ 4) $50 - a^2$

12) Sum of all main diagonals of cube of side 'a' is .....

1) $\sqrt{12}a$ 2) $\sqrt{48}a$ 3) $\sqrt{27}a$ 4) 4a

13) Number of ways to write 100 as product of two relatively prime natural numbers is...

1) another prime number 2) another odd but not prime
3) perfect number 4) perfect cube number

14) Which of the following is Kaprekar's constant?

1) 6174 2) 6714 3) 6724 4) 6147

15) a, b, c, d are 4 consecutive positive integers in A.P. Then which of the following is a perfect square?

1) abcd + 1 2) ab + cd +1 3)ac + bd +1 4) a+b+c+d + 1

16) If $\frac{x^4+x^2+1}{x(x-1)+1} = p(x)$ then the product of roots of p(x)=0 is .....

1) 1 2) 1/2 3) -1 4) -1/2

17) Number of positive integer ordered pairs (x,y) satisfying $x + y = 12$ is 'a'. Then $a^2-11a+7$ =.....

1) 7 2) 11 3) 4 4) 18

18) $\tan^2 x + \cot^2 x = 2$ where $x \in (0, \frac{\pi}{2})$. Then $\text{Cosec}^4 x - \sec^4 x + \sin^4 x$ = ...

1) $\frac{3}{4}$ 2) $\frac{1}{4}$ 3) 1 4) 2

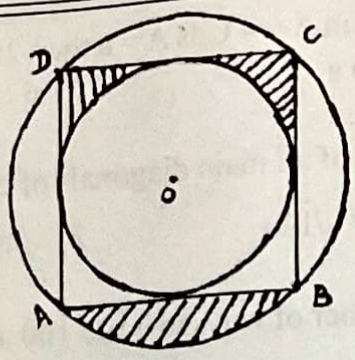
19) A cylinder and a cone are on same base and have same height 2018 units. Their volumes are in the ratio .....

1) 2 : 3 2) 3 : 1 3) 1 : 1 4) 2018 : 1

20) Pictorial representation of statistical data by means of rectangles is .....

1) Frequency polygon 2) Histogram
3) Instagram 4) cuboid

21) ABCD is a square of diagonal $\sqrt{2}$ units.
Then the area of shaded rigion will be....sq.units



1) $\frac{14-3\pi}{8}$ 2) $\frac{\pi-1}{8}$

3) $3-\frac{\pi}{2}$ 4) $\frac{1}{4}$

22) For a moderately asymetric statistical data, if mean exceeds median by 1.5, then the difference between mean and mode is .....

1) 0.5 2) 4.5 3) 1.5 4) cannot be determined

23) Number of non-trival subsets of set of first 10 natural numbers is .....

1) 1024 2) 1020 3) 729 4) 1022

24) Let S be a square of unit area. Consider any quadrilateral which has its vertices respectively on each side of S. If a, b, c, d denote the lengths of sides of quadrilateral then maximum possible value of $a^2+b^2+c^2+d^2$ is .....

1) 4 2) 3 3) 1 4) 2

25) $\sqrt{2+\sqrt{2+\sqrt{2+\sqrt{2+\sqrt{}}}}}\ldots = x$ then $\sqrt{x+\sqrt{x+\sqrt{x+\sqrt{x+\sqrt{\ldots.}}}}} = ...$

1) x - 2 2) $x^2 - 2$ 3) $x+2$ 4) x^2+2

26) Which of the following medals is prestigious in the subject of mathematics?

1) Field's medal 2) Arjuna medal
3) Noble medal 4) Kelvin medal

27) Number of points (x,y) where both x and y are integers with in the triangle formed by (0,0),(10,0) and (0,10) is .....

1) 28 2) 45 3) 36 4) 64

28) Which of the following number is called "Armstrong" number?

1) 1729 2) 153 3) 28 4) 6179

29) A regular octagon is formed by cutting away equal right triangles from the four corners of a square of side 2units. The side of such an Octagon must be.....

1) $2+\sqrt{2}$ 2) $2-\sqrt{2}$ 3) $1+\sqrt{2}$ 4) $\sqrt{2}-1$

30) If $p,q \in \{1,2,3,4\}$; the number of quadratic equations $x^2+px+q=0$ which have real and distinct roots is ...

1) 5 2) 12 3) 10 4) 11

31) If Sec θ - Tan θ = λ then Tan θ = ...

1) $\frac{1}{2}(\lambda+\frac{1}{\lambda})$ 2) $(\frac{\lambda^2+1}{4\lambda})$ 3) $\frac{1}{2}(\frac{1}{\lambda}-\lambda)$ 4) $\frac{1}{4}(\lambda^2+\frac{1}{\lambda})$

32) If $x^3+3xy^2=14$, $y^3+3yx^2=13$; x,y are real then x^2+y^2 = ...

1) 8 2) 14 3) 5 4) 25

33) The 40th triangular number is .....

1) 820 2) 670 3) 400 4) 576

34) AE and BF are medians drawn to the legs of right angled triangle ABC, $\angle C = 90^0$

The numerical value of $\frac{AE^2+BF^2}{AB^2}$ is equal to .....

1) $\frac{1}{2}$ 2) $\frac{5}{4}$ 3) $\frac{3}{2}$ 4) $\frac{2}{3}$

35) If x, y, z are distinct real numbers such that $x+\frac{1}{y}=y+\frac{1}{z}=z+\frac{1}{x}$ then $x^2y^2z^2$ = ...

1) 2 2) 4 3) 3 4) 1

36) If $\log_8 m + \log_8 \frac{1}{6} = \frac{2}{3}$ then m = ...

1) 4 2) 24 3) 16 4) $8^{\frac{2}{3}}$

37) If A= {-1,0,2,5} and B = {0,3,-2,18,6}; $f(x) = x^2 - x - 2$ then f(A) = ...

1) f(A)=B 2) $f(A) \subset B$ 3) $B \subset f(A)$ 4) $f(A) \subseteq B$

38) The sides of an equilateral triangle ABC are 12cm each. D is the foot of the perpendicular from A to BC. If E is the mid point of AD, then BE = ...

1) $7\sqrt{3}$ 2) $6\sqrt{3}$ 3) $4\sqrt{3}$ 4) $3\sqrt{7}$

39) If $A=\{x/x^2+3x-4=0\}$, $B=\{x/x^2+3x+2=0\}$ then A - B = ...

1) {-1,-1} 2) {-4,-2} 3) A 4) { } or ϕ

40) If $\frac{\log_2 x}{4}=\frac{\log_2 y}{6}=\frac{\log_2 z}{3k}$ and $x^3y^2z=1$ then k = ...

1) -8 2) 8 3)-6 4)can not be find

41) ABCD is a quadrilateral in which the angle bisectos of $\angle A$ and $\angle B$ meet at P. Then $\angle C + \angle D$ = ...

1) $3\angle APB$ 2) $2\angle APB$ 3) $\angle APB$ 4) $4\angle APB$

42) A motor boat whose speed is 36kmph in the still water. It takes one hour more to go 48 km. up stream than return down stream to the same spot. The speed of the stream is (in kmph) .....

1) 8 2) 6 3) 12 4) 9

43) A polygon of n sides has 35 diagonals then n = ...

1) 15 2) 10 3) 12 4)20

44) $\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}}=2,\ \frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$ then the values of x and y respectively.....

1) 2,3 2) 6,9 3) 4,6 4) 4,9

45) The product of Vimal's age (in years) four years ago and her age six years from now is one more than twice her present age. Her present age is ..... years.

1) 6 2) 11 3) 5 4) 8

46) A mathematician, who computed the total 1+2+3+....+99+100 in almost notime while he was just 10 years old

1) Ramanujan 2) Newton 3) Cantor 4) Gauss

47) In the pairs of linear equations:

A) Inconsistant pair has infinitely many solutions,

B) Dependent pair has no solution,

then the true statement is / are..

1) Only A 2) Only B 3) Neither A nor B 4) Both A and B

48) The point that does not lie on the line 2x - 3y - 5 =0 is...

1) (1, -1) 2) (4,1) 3) (1, -2) 4) (7,3)

49) The first use of the idea of ' Sine' as we use it today was found in the book.

1) The Elements 2) Aryabhatiyam

3)Almagest 4)Encyclopedia Mathematica

50) A chord of a circle of radius 8cm. is making an angle 120° at the centre. Then length of the chord is ..... cm.

1) $4\sqrt{3}$ 2) $8\sqrt{3}$ 3) $6\sqrt{3}$ 4) $2\sqrt{3}$

51) $\text{Tan } 1^{0} \times \text{Tan } 2^{0} \times \text{Tan } 3^{0} \times \ldots \times \text{Tan } 89^{0} = \ldots\ldots$

1) $\propto$(infinity) 2) 0 3) 1 4) $\sqrt{2}$

52) $\text{Sin}(A+B) = \frac{\sqrt{3}}{2} = \text{Cos } B$ then $\text{Tan } 2A = \ldots\ldots$

1) $\sqrt{2}$ 2) $\sqrt{3}$ 3) 1 4) $\frac{1}{\sqrt{3}}$

53) The word ' tangent' came from a Latin word 'tangere' was introduced by .....

1) Gauss 2) Aryabhatta 3)Thomas Fineke 4)Thales

54) If tangents PA and PB from a point P to a circle with centre 'O' are inclied to each other at an angle of 80^{0}, then $\angle POA = \ldots\ldots$

1) 50^{0} 2) 60^{0} 3) 70^{0} 4)80^{0}

55) The sum of the length, breadth and depth of a cuboid is 19cm. and its diagonal is $5\sqrt{5}$ cm. Its total surface area is (in cm^{2}).....

1) 118 2) 236 3) 361 4)486

56) If the radius of a sphere is increased by 2cm., its surface area increases by $352cm^{2}$. The radius of the sphere before the increase was (in cm.) .....

1) 3 2) 4 3) 5 4) 6

57) What is the volume of cube?

A. The area of each face of the cube is $64cm^{2}$

B. The length of one side of the cube is 8cm

Then to solve this, the statement

1) A alone is sufficient 2) B alone is sufficient

3) either A or B alone is sufficient 4) Both A and B are necessary.

58) Find out the wrong term in the series 5, 8, 22, 42, 124, 244, 736.....

1) 8 2) 22 3) 42 4) 244

59) In drawing a pair of tangents to a circle of radius 6cm, which are inclined to each other at angle of 60^0 at a point P, then PO = ... (O is centre of circle)

1) 10cm 2) 12cm 3)6cm 4) 8cm

60) Marks of a student in 5 subjects in a monthly test are 2, 3, 4, 5, 6. In these obtained marks 4 is the .....

1) Mean and Median
2) Mean but not median
3) Median but not mean
4) Mode