DELHI PUBLIC SCHOOL, JAMMU
Sample questions for Term Exam (2019 – 2020)
(as per the pattern of CBSE sample paper)

Sub:- Mathematics
Class:- X
(Objective type)

1. Find quadratic equation whose sum of roots is $\sqrt{5}$ and product of roots is $\frac{1}{3}$
2. If Tan A = 5/12 , Find the value of (sin A +cosA) x sec A is
   (a) 17/12 (b) 12/17 (c) 5/13 (d) 17/13 .
3. A ladder is 10m length touches a wall of height of 5m. The angle Q made by it with the horizontal Is.
   (a) 90° (b) 60° (c) 45° (d) 30°
4. A Pole 10 m high cast a shadow 10m long on the ground , then the sun elevation is
   (a) 60° (b)45° (c) 30° (d) 90°
5. A chord of a circle of radius 14 cm subtends a right angle at the centre. What is the area of the minor sector:
   a) 154 b) 164 c) 174 d) 184
6. How many tangents, parallel to a secant can a circle have?
   a) One b) Two c) Three d) Infinite
7. n^2-1 is divisible by 8,if n is :
   a. an integer
   b. an odd number
   c. a natural number
   d. an even number
8. If the product of the zeroes of the polynomial $f(x)= ax^3-6x^2+11x-6$ is 4,then a is
   a. 3/2
   b. 2/3
   c.-3/2
   d.-2/3
9. If the quadratic polynomial x^2+kx+k has equal zeroes then k cannot be
   a. 0
   b .a positive integer
   c. an even integer
   d. an odd integer
10. T he pair of equations y=0 and y=-7 has ..... solution.
11. Which term of AP 21, 42, 63, 84 ……... is 210.
12. If 2, 6, 10, 14, 18……. Is an AP, then its nth term is?
13. If the area of a circle is numerically equal to twice its circumference then the diameter of the circle is
    A 4units B 5 units C8 units D 2 units .
14. The outer and inner diameters of a circular ring are 34cm and 32cm .the area will be ….
15. Construction of a cumulative frequency table is useful in determining the

A. Mean B. Median C. Mode D. All the three measures .

16. The mean of 45, 35, 20,30,15,25,40 is

A . 15 B. 25 C . 35 D . 30

17. Find the length of the tangent drawn from a point whose distance from thee centre off a circle is 25cm. Given that radius of the circle is 7 cm.

18. What is the perimeter of sector of angle 45° of a circle with radius 7cm.

19. The area of a circle is numerically equal to twice its circumference. Find diameter of the circle.

20. The mean of 6 numbers is 16 with the removal of a number the mean of the remaining number is 17.The removal number is

A 2 B 22 C 11 D 6

(Very short type questions)

21.Find the roots by quadratic formula. $\frac{1}{x} - \frac{1}{x-2} = 3$

22.Solve by factorization $x^2 + 2\sqrt{2}\,x - 6 = 0$

23.A vertical pole 9m high is broken at certain height due to wind, and its upper part, not completely separated, meets the ground at an angle of 30°. Find the height at which the pole is broken.

24.Prove geometrically that $\text{Sin}^2\theta + \text{Cos}^2\theta = 1$

25.A wire is looped in the form of a circle 28 cm. If it is reverted into a square form. Determine the side of square.

26.Two tangents PA and PB are drawn to the circle with centre O, such that angle APB = 120°, Prove that OP = 2AP.

27.Draw a line segment of length 8 cm and divide it in the ratio 3:2. Measure the two parts.

28.Find the distance of a point P(x,y) from the origin.

29.Find the value of a, so that the point (3,a) lies on the line represented by 2x-3y=5.

30.Find the distance of the point P(-3,4) from x-axis.

31.Find a and b such that the numbers a, 9, b, 25form an AP.

32.Find the sum of first eight multiples of 3.

33.How many two-digit numbers are divisible by 3.

34. Show that 12^n cannot end with the digit or 5 for any natural number n.

35. If α and β are zeroes of the polynomial $ax^2 + bx + c$, then find $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$.

36. Show graphically the given system of equations 2x+4y=10 and 3x+6y=12 has no solution.

37.Two coins are tossed simultaneously. Find the probability of getting

. i)Atleast one head.

ii).Atmost two tails.

38. The radius and height of a metallic cylinder are 4.2cmand 5,6cm respectively. It is melted and recast into a sphere . Find the radius of the sphere.

(Short type)

39.Find k if $x^2 - kx + 3 = 0$ has (a) two distinct real roots (b) two coincident roots.

40.In Δ ABC, right angled at C, tanA = $\frac{3}{4}$, find sinAcosA +sinBcosB and sinAcosB+sinBcosA

41.Prove that $\frac{1+sec\theta -tan\theta}{1+sec\theta +tan\theta} = \frac{1-sin\theta}{cos\theta}$

42.A straight highway leads to the foot of tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is 60° . Find the time taken by the car to reach the foot of tower from this point.

43.Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre.

44.Construct a triangle with sides 4cm, 5cm and 6cm and then another triangle whose sides are 8/5 of the corresponding sides of the first triangle.

45.A steel wire when bent in the form of a square encloses an area 121 cm^2. If the same wire is bent into the form of a circle, find the area of circle.

46.Construct an isosceles triangle whose base is 8cm and altitude 5cm and then another triangle whose sides are 4/3 times the corresponding sides of the isosceles triangle.

47.Find the middle term of an AP 6, 13, 20…….216.

48.The 19^{th} term of AP is equal to the three times its 6^{th} term. If 9^{th} term is19 find the AP.

49.Find the sum of all two-digit natural numbers which when divided by 3 yields 1 as a remainder.

50.If the ratio of the sum of first n terms of two APs is (7n+1): (4n+27), find the ratio of their mth term.

51. Find the value of α and β for which the following pair of linear equation has

infinite number of solutions:

2x+3y=7

2αx + (α+β) y=28.

52. Prove that 3-√5 is an irrational number.

53. If one zero of polynomial (a^2+9)x^2 +13x +6a is reciprocal of the other, find the value of a

54. Find whether the following pair of linear equation has a unique solution. If yes, find the solution.

7x-4y=49 and 5x-6y=57.

55. Find the center of a circle passing through the points (6,-6),(3,-7) and (3,3).

56.Determine the ratio in which the line 2x +y-4=0 divides the line segment joining the points A(2,-2) and B(3,7).

57. If the coordinates of the mid points of the sides of triangle are (2,1) , (3,-5) and (6,4).Find its centroid.

58. Find the value of K for which points A(-6,10) ,B(-4,K) and C(3,-8) are collinear. Also, find the ratio in which B divides AC and the length of AC.

59.Acard is drawn at random from a well shuffled deck of 52 playing cards Find the probability of getting neither a black colour card nor a king .

60. A toy is in the form of a cone mounted on a hemisphere of same radius 7cm . If the total height of the toy is 31 cm . Find the total surface area .

61. The diameter of a metallic sphere is 6 cm . The sphere is melted and drawn into long wire of uniform Circular cross section . If the length of wire is 36 cm , find its radius

62. Calculate Mean Median Mode

C.I. 0 to 10 , 10 to 20 , 20 to 30 , 30 to 40, 40 to 50 .

F	5	10	15	6	4

63. A bagb contains 4 red , 3 white and 8 blue balls. Aball is drawn at random from the bag . Find the probability that ball is (1) Either red or blue (2) Neither blue nor white .

(Long Type)

64.Solve for x , $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, a+ b $\neq$ 0

65.A boy standing on top of a deck of ship which is 5m high. Angle of elevation of his eyes on cloud is 30^0 and angle depression of image of cloud in water is 60^0. Find height of cloud above water level.

66. Evaluate $\frac{\cos 58°}{\sin 32°} + \frac{\sin 24°}{\cos 66°} - \frac{\cos 38° cosec\, 52°}{tan\, 18° tan\, 35° tan\, 60° tan\, 72° tan\, 55°}$

67.The area of a circle inscribed in an equilateral triangle is 154cm^2. Find the perimeter of the triangle.

68.Draw a pair of tangents to a circle of radius 4 cm which are inclined to each other at an angle of 45°.

69. Prove that radius and tangents at point of contact are perpendicular to each other.

70. If pth, qth and rth terms of an AP area, b, respectively, then show that

(a-b) r+(b+ c) p+(c-a) q=0

71.The sum of four consecutive numbers in an AP is 32 and the ratio of the product of the first and the last term to the product of the two middle terms is 7:15.Find the numbers.

72.In an AP , 6^{th} term is half the 4^{th} term, and the 3^{rd} term is 15. How many terms are needed to give a sum that is equal to 66.

73. Using Euclid's division algorithm, find whether the pair of numbers 847,2160 are coprime or not.

74. If α and β are the zeroes of the quadratic polynomial $f(x)= 2x^2-5x+7$,find a polynomial whose zeroes are $2\alpha + 3\beta$ and $3\alpha + 2\beta$.

75.A two digit number is 4 times the sum of its digits and twice the product of the digits. Find the number.

76.Prove that the area of triangle whose vertices are (t ,t-2) , (t+2, t+2) and (t+3, t) is independent of t.

77. In what ratio does the point P(p,-1) divide the line segment joining the points A(1,-3) and B(6,2)? Hence, find the value of P.

78.IFA(2,-1) ,B(3,4) , C(-2,3) , D(-3,-2) be four points in a plane, Show that ABCD is a rhombus but not a square.Find the area of the rhombus.

79. A bagb contains 4 red , 3 white and 8 blue balls. Aball is drawn at random from the bag . Find the probability that ball is (1) Either red or blue (2) Neither blue nor white .

80. Draw the less than ogive of frequency table given below ;

Daily income :	300 to 350	350 to 400	400 to 450	450 to 500	500 to 550
No. of workers :	8	12	6	4	10

81.One card is is drawn from a well shuffled deck of 52 cards . find the probability of drawing (1) an ace of red suit . (2) a non diamond . (3) neither a king nor a queen . (4) a queen of spade .

Question Bank IX

(Objective Type)

1. .The perpendicular distance of the point P (4,3) from y-axis is
(a) 4 (b) 3 (c) 5 (d) none of these

2. Find mode and median of data
51,14,71,15,91,2,51,19,41,51,18,15,51.
3. Graph of linear equation is always_____.

(Very Short Type)

4. Represent $2x + 7 = 0$ in Cartesian plane.
5. Find the value of K, if (2,1) is solution of equation $2x+3y=k$. find three more solutions for the equation obtained.
6. If 12 is median of 3,4,6,8,x+2,2x+1,16, 19,20,22. Find x

(Short Type)

7. If force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the situation in the form of linear equation taking constant mass equal to 6 kg. Also draw graph for the situation.
8. Plot A(0,2), B(-2.5,0) and C(3.5,0) in graph and find area of triangle ABC.
9. Given below are the seats won by different political parties in a poll.
Draw bar graph.

Political party	A	B	C	D	E	F
Seats won	75	55	37	29	10	35

(Long Type)

10. For given data construct frequency polygon.

Number of letters	1-5	6-10	11-15	16-20	21-25
Number of surnames	6	30	40	16	4

Or

For given data construct histogram.

Number of letters	1-4	4-6	6-8	8-12	12-20
Number of surnames	6	30	44	16	4

11. The auto fare in a city is charged Rs 10 for first kilometre and Rs 4 for the subsequent distance covered. Write linear equation for the situation . Also draw graph for the situation.
12. Join Points (1,0), (3,3), (6,3) and (7,0) in Cartesian plane. Join to form a figure. Draw mirror image of figure through x-axis and find their area.