

DAV BORL PUBLIC SCHOOL BINA

Class-X (Mathematics) 2019-20

Sample Paper-I

Time -3 hours

Maximum Mark: 80

General Instructions-

1. Each question of section A carries 1 mark.
2. Each question of Section B carries 2 marks.
3. Each question of Section C carries 3 marks.
4. Each question of Section C carries 4 marks

SECTION A	
	The following questions consist of two statements –Assertion (A) and Reason (R) . Answer these questions selecting the appropriate option given below. (a) Both A and R are true and R is the correct explanation for A. (b) Both A and R are true and R is not the correct explanation for A. (c) A is true but R is false. (d) A is false and R is true.
1	Assertion (A): pair of linear equations , $9x+3y+12 = 0$, $18x+6y+24 = 0$ have infinitely many solutions. Reason (R) : Pair of linear equations $a_1x+b_1y+c = 0$ and $a_2x+b_2y+c_2 = 0$ have infinitely many solutions if $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ Fill in the blanks
2	$\sqrt{2}, \sqrt{3}, \sqrt{7}$, etc are – numbers.
3	If $a=bq+r$, least value of r is - .
4	The product of three numbers is – to the product of their H.C.F and l.c.m
5	A – is a polynomial is of degree 0.
6	A pair of linear equations is – if it has no solutions.
7	The equation $x^2+x-5=0$, the product of its two roots is -.
8	Find the values of following questions. $\frac{2\tan \theta}{1+\tan^2 \theta}$ where $\theta = 30^\circ$
9	18 , a, b , -3 are in A.P then a+b is equal to (a) 19 (b) 7 (c) 11 (d) 15
10	The distance between the points A(0,7) and B(0,-3) is (a) 4 (b) 10 (c) 7 (d) 3
11	The area of a triangle with vertices (a,b+c), (b,b+c) and (c,a+b) is (a) $(a + b + c)^2$ (b) o (c) a+b+c (d) abc
12	The distance between the points $(\cos \theta , \sin \theta)$ and $(\sin \theta , -\cos \theta)$ is (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) 2 (d) 1
13	The length of each side of a rhombus whose diagonals are of lengths 10 cm and 24 cm is (a) 25 (b) 13 (c) 26 (d) 34
14	$9\sec^2 \theta - 9 \tan^2 \theta$ is equal to (a) 1 (b) 9 (c) 8 (d) 0

15	The value of $\frac{\tan 30^\circ}{\cot 60^\circ}$ is (a) -1 (b) 2 (c) 1 (d) -2
16	The distance of point P(2,3) from the x-axis is (a) 2 (b) 3 (c) -2 (d) -3
17	The product of two consecutive integers is divisible by (a) 2 (b) 3 (c) 5 (d) 7
	State whether the following statements are true or false
18	The product of any three consecutive natural numbers is divisible by 6.
19	A polynomial can not have more than one zero.
20	A pair of intersecting lines representing a pair of linear equations in two variables has a unique solution.
	SECTION-B
21	Find the sum of $0.\overline{68} + 0.\overline{73}$
22	If 1 is the zero of polynomial $p(x) = ax^2 - 3(a-x) - 1$, then find the value of a.
23	Is the following pair of linear equations consistent? Justify your answer. $2ax + by = a$, $4ax + 2by - 2a = 0$
24	Is 0.3 a root of equation $x^2 - 0.9 = 0$? Justify.
25	How many terms of an A.P 18, 16, 14-----be taken so that their sum is zero.
26	Express $\sin 67^\circ + \cos 75^\circ$ in terms of trigonometric ratio of angles between 0° and 45° .
	SECTION-C
27	If $\sin \theta + \cos \theta = \sqrt{3}\theta$, then prove that $\tan \theta + \cot \theta = 1$.
28	If the points $P(k-1, 2)$ is equidistant from the points $A(3,k)$ and $B(k,5)$, find the value of k.
29	In triangle ABC , $\angle B = 90^\circ$ and D is the mid-point of BC. Prove that $AC^2 = AD^2 + CD^2$
30	Find the 31 st term of an AP whose 11 th term is 38 and 16 th term is 73.
31	A two digit number is four times the sum of the digits. It is also equal to 3 times the product of digits. Find the number
32	Given $15 \cot A = 8$, find $\sin A$ and $\sec A$
	OR
	Write the smallest number which is divisible by both 306 and 657.
33	Solve: $7x - 4y = 49$, $5x - 6y = 57$
34	The coordinates of the centroid of a triangle are (1, 3) and two of its vertices are (-7,6) and (8,5). Find the third vertex. Also, find the coordinates of the centroid of the triangle when the third vertex is (2,4).
	SECTION-D
35	Prove that: $(\sin \theta + \sec \theta)^2 + (\cos \theta + \csc \theta)^2 = (1 + \sec \theta \csc \theta)^2$
36	If P and Q are the points on side CA and CB respectively of triangle ABC, right angled at C, prove that $(AQ)^2 + (BP)^2 = (AB)^2 + (PQ)^2$
37	Show graphically the given system of equations $2x + 4y = 10$ and $3x + 6y = 12$ has no solution.
38	Use Euclid's division algorithm to find HCF (i) 960 and 432 (ii) 4052 and 12576.
39	Obtain all other zeros of polynomial of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeros are $\pm \sqrt{\frac{5}{3}}$.
40	Speed of a boat in still water is 15 km/hr. It goes 30 km upstream and returns back at the same point in 4 hr 30 minutes. Find the speed of stream.