DAV BORL PUBLIC SCHOOL, BINA

SAMPLE PAPER – I: 2019 – 20

MATHEMATICS

CLASS – IX

TIME ALLOWED: 3 HRS **MAXIMUM MARKS: 80**

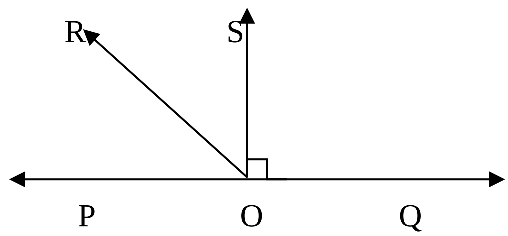
General Instructions:-

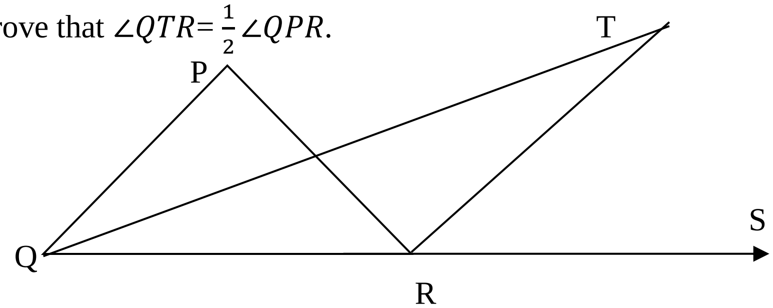
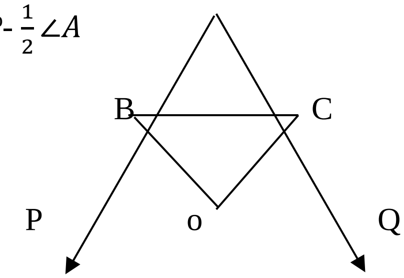
- **Please check that this question paper contains 30 questions and 3 printed pages.**
- The question paper consists of four sections: A, B, C and D
- Section A consists of 20 MCQ questions of 1 mark each.
- Section B consists of 6 questions of 2 mark each.
- Section C consists of 8 questions of 3 mark each.
- Section D consists of 6 questions of 4 mark each.
- All questions are compulsory.
- There is no overall choice. However, internal choices have been given in some questions.
- Use of calculator is not permitted.

SECTION – A

1.	Choose and write the correct option in each of the following questions	
(i)	Decimal representation of a rational number can not be (a) Non-terminating (b) terminating (c) non-terminating repeating (d) non-terminating non-repeating	
(ii)	Every irrational number is (a) A whole number (b) a natural number (c) a real number (d) an integer	
(iii)	Degree of the zero polynomial is (a) 0 (b) 1 (c) any natural number (d) Not defined	
(iv)	A cubic polynomial has (a) Two zeros (b) one zero (c) three zeros (d) at least three zeros	
(v)	The graph of the linear equation $2x + 3y = 6$ is a line which meets the x-axis at the points. (a) (0,2) (b) (2,0) (c) (0,3) (d) (3,0)	
(vi)	The linear equation $5x = 2y$ has (a) A unique solution (b) no solution (c) two solutions (d) infinitely many solutions	

(vii)	Point (-3,5) lies in (a) First quadrant (b) second quadrant (c) third quadrant (d) fourth quadrant	
(viii)	Abscissa of all the points on the y-axis is (a) 1 (b) any number (c) 0 (d) 2	
(ix)	Thales belongs to the country (a) Babylonia (b) Rome (c) Egypt (d) Greece	
(x)	If equal be subtracted from equals, the remainders are (a) Equal (b) unequal (c) twice of each other (d) half of the other	
2.	Complete the following statements with appropriate word in the blank space	
(xi)	If a ray stand on a line, then the sum of two adjacent angles so formed is_______________	
(xii)	If a transversal line intersect two parallel lines then each pair of interior angles on the same side of the transversal is -------------------------	
(xiii)	In a triangle, side opposite to larger angle is____________________	
(xiv)	Diagonals of a rhombus bisect each other at ______________ angles.	
(xv)	Sum of exterior angles of a quadrilateral is ___________________	
3.	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 but R is true	
(xvi)	**Assertion (A) :** In a parallelogram, the bisectors of any two consecutive angles intersect at right angle. **Reasons (R) :** The diagonals of a parallelogram are equal if and only if it is a rectangle.	
(xvii)	**Assertion (A) :** Difference of any two sides of a triangle is less than the third side. **Reason (R) :** Perimeter of a triangle is greater than the sum of its three medians.	
(xviii)	**Assertion (A) :** A triangle can have two obtuse angles. **Reasons (R) :** The sum of angles of a triangle can not be more than 180^{o}	
(xix)	**Assertion (A) :** A circle is a rectilinear figure. **Reasons (R) :** A figure formed of line segments only is called a rectilinear figure.	
(xx)	**Assertion (A) :** The perpendicular distance of the point P(3,5) from x-axis is 5. **Reason (R) :** the perpendicular distance of the point P(x,y) from x-axis is y.	
	SECTION - B	

4.	If $\sqrt{2}$ = 1.414 and $\sqrt{3}$ = 1.734 then find the value of $\frac{1}{\sqrt{3}+\sqrt{2}}$ by rationalizing the denominator.	
5.	If x +1 is a factor of $ax^3 + x^2 - 2x + 4a - 9$, find the value of a.	
6.	If x = 0 and y = k is a solution of the equation 5x – 3y = 0, find the value of k.	
7.	Prove that every line segment has one and only one midpoint.	
8.	If the difference between two supplementary angles is 40^{o}, then find the angles.	
9.	Prove that each angle of an equilateral triangle is 60^{o}.	
	SECTION -C	
10.	In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. $OS$is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$  	
11.	Represent $\sqrt{7.3}$ on the number line. OR Find the values of a and b from : $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$	
12.	Factorise : $\frac{r^3}{8} - \frac{s^3}{343} - \frac{t^3}{216} - \frac{1}{28}rst$	
13.	D is a point on side BC of ΔABC such that AD = AC. Show that AB $>$ AD.	
14.	ABC is a triangle, right-angled at C. A line through the mid-point M of the hypotenuse AB and parallel to BC intersects AC at D. Show that: (a) D is the mid-point of AC (b) MD $\perp$ AC (c) CM = MA = $\frac{1}{2}$AB	
15.	Prove that in a triangle other than an equilateral triangle, angle opposite the longest side is greater than $\frac{2}{3}$ of a right angle.	
16.	ABCD is a rhombus. Show that AC bisects $\angle A$ as well as $\angle C$ and diagonal BD bisects $\angle B$ as well as $\angle D$.	
17.	Prove that if two parallel lines are intersected by a transversal, then bisectors of any two corresponding angles are equal.	
	SCETION -D	

18.	In the given figure, the side QR of ΔPQR is produced to a point. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $\angle QTR = \frac{1}{2}\angle QPR$. 	
19.	Factorise : a^7 - ab^6 ***OR*** Factorise using Lon division method $x^3 + 13x^2 + 32x + 20$	
20.	The taxi fare in a city is as follows. For the first kilometer, the fare is Rs 8, for the subsequent distance it is Rs 5 per km. taking the distance covered as x km and total fare as Rs y, write a linear equation for this information and draw its graph.	
21.	Prove that an equilateral triangle can be constructed on any given line segment.	
22.	In the given figure, the sides AB and AC of ΔABC are produced to point E and D respectively. If the bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point O, then prove that $\angle BOC$ = 90º- $\frac{1}{2}\angle A$ 	
23.	The line segment joining the mid-points of two sides of a triangle is parallel to the third side and equal to half of it.	