DAV BORL PUBLIC SCHOOL, BINA
PRACTICE PAPER , HALF YEARLY (2018-19)

Class: IX   Subject: Maths

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 6 questions of 1 mark each.
➢ Section B consists of 6 questions of 2 mark each.
➢ Section C consists of 10 questions of 3 mark each.
➢ Section D consists of 8 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.   If the polynomial $3x^4 - 4x^3 - 3x - 1$ is divided by $x - 1$, then find the remainder.
2.   The abscissa of a point is x and ordinate is y, what is the position of the point.
3.   In the given figure, if AOB is a straight line, find $\angle AOD$.

$(x + 10)^o \left(\frac{x}{2}\right)^o$ $\left(\frac{7x}{2} - 5\right)^o$
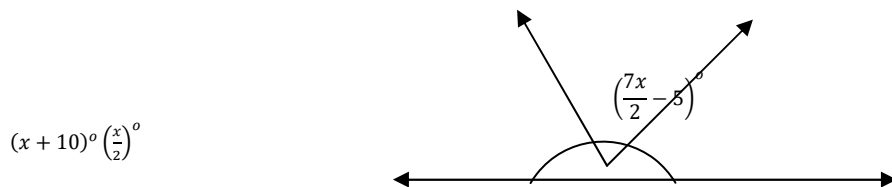
4.   Express $0.\overline{4}$ in the form of $\frac{p}{q}$, where p and q are integers and q ≠ 0.

5.   Find the value of k, if x = 2, y = 1 is a solution of the equation 2x + 3y = k.

6.   If a point P be the mid -point of line segment AB, prove that AP = BP = $\frac{1}{2}$AB.

SECTION - B

7.   Rationalize the denominator of the following:
$$\frac{30}{5\sqrt{3} - 3\sqrt{5}}$$

8.   Find the value of m so that 2x -1 is a factor of $8x^4 + 4x^3 - 16x^2 + 10x + m$.

9.   Plot the points A(2,0), B(2,2), C(0,2) and draw the line segments OA, AB,BC and CO. what do you obtain? Find its area.

10.   Write four solutions for the equation πx + y = 9.

11.   If a point C lies between two points A and B such that it is the mid- point of the line segment AB, prove that every line segment has one and only one mid-point.

12. In the Fig. line AB and CD intersect at O. If $\angle AOC + \angle BOE = 80^o$ and $\angle BOD = 30^o$, find $\angle BOE$ and reflex $\angle COE$.
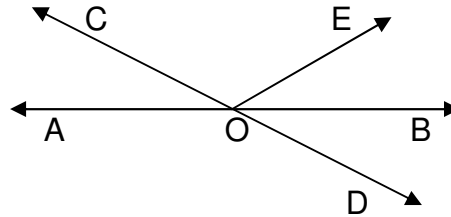
SECTION -C

13. 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 $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$
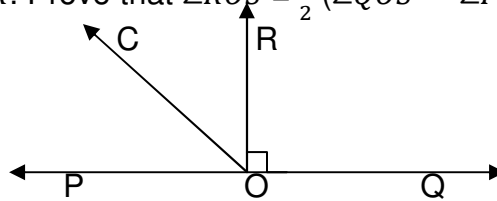
14. Represent $\sqrt{7.3}$ on the number line.

15. Resolve into linear factors:
$27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}p$
OR
Find the product of $(x - 1)(x + 1)(x^2 + 1)(x^4 + 1)$

16. D is a point on side BC of ΔABC such that AD = AC. Show that AB > AD.

17. 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

18. 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.

19. ABCD is a rhombus. Show that AC bisects $\angle A$ as well as $\angle C$ and diagonal BD bisects $\angle B$ as well as $\angle D$.

21. Prove that if two parallel lines are intersected by a transversal, then bisectors of any two corresponding angles are equal.

22. Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?

23. Prove that : $\left(\frac{2^a}{2^b}\right)^{a+b} \times \left(\frac{2^b}{2^c}\right)^{b+c} \times \left(\frac{2^c}{2^a}\right)^{c+a} = 1$

SCETION -D

24. Find the values of a and b from :
$\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

25. Factorise : $a^7 - ab^6$
OR
Factorise using Lon division method $x^3 + 13x^2 + 32x + 20$

26. 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.

27. Prove that an equilateral triangle can be constructed on any given line segment.

28. 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

$\angle BOC = 90° - \frac{1}{2}\angle A$
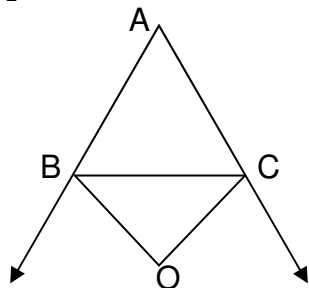
29. The line segment joining the mid-points of two sides of a triangle is parallel to the third side and equal to half of it.

30. 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 $\angle QTR = \frac{1}{2}\angle QPR$.