

Roll No. Candidates must write the Set No.  
on the title page of the answer book.

## DAV PUBLIC SCHOOLS, ODISHA ZONE – I

## PERIODIC TEST -2 , 2017-18

- Check that this question paper contains 4 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 30 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

## CLASS – IX

## SUB : MATHEMATICS

*Time : 3 Hours**Maximum Marks : 80***General Instructions :**

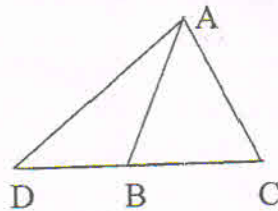
- All questions are compulsory.
- There are 4 sections. Section A carries 6 questions of 1 mark each.
- Section B carries 6 questions of 2 marks each.
- Section C carries 10 questions of 3 marks each.
- Section D carries 8 questions of 4 marks each.

**Section: A****(1 X 6 = 6)**

1. Find the area of the triangle formed by joining the points (0,0),(2,0) &(0,-1).
2. In two triangles ABC & DEF, it is given that  $\angle A = \angle D$ ,  $AC = DF$  &  $BC = EF$ .  
Check whether the given triangles are congruent or not.
3. Find the area of an equilateral triangle whose measure of its side is 4cm.
4. Insert an irrational number between  $\frac{1}{2}$  and  $\frac{3}{5}$ .
5. Find the remainder when  $x^4 + x^3 - 2x^2 + x + 1$  is divided by  $(x - 1)$ .
6. How many planes can be made to pass through two distinct points?

**Section: B****( 2 X 6 = 12)**

7. Without finding the cubes, factorise  $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$
8. If a point C lies between two points A and B on AB such that  $AC=BC$ , use Euclid's Axiom to prove that  $AC = \frac{1}{2}AB$ .
9. Diagonal AC of a quadrilateral ABCD bisects the angles A and C. Prove that  $AB=AD$ .
10. In the given figure,  $AB=AC$  & D is any point on CB produced. Show that  $AD > AB$ .

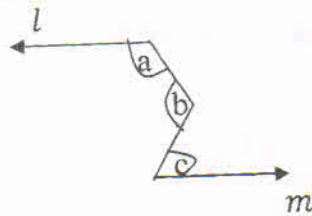


11. Plot the points  $A(1,0)$ ,  $B(4,0)$  &  $C(1,3)$ . Find the coordinate of point D such that ABCD is a square.
12. Find the coordinate of the mirror image of point A  $(-3,5)$  along x-axis.

**Section: C****( 3 X 10 = 30)**

13. If the polynomials  $ax^3 + 4x^2 + 3x - 4$  &  $x^3 - 4x + a$  leave the same remainder when divided by  $x - 3$ . Find the value of 'a'.
14. The side BC of  $\Delta ABC$  is produced to D. The bisector of  $\angle A$  meets BC in L. Prove that  $\angle ABC + \angle ACD = 2\angle ALC$
15. 'O' is any interior point of  $\Delta ABC$ . Prove that  $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$
16. Prove that sum of any two sides of a triangle is greater than twice the median with respect to the third side.
17. Find the coordinate of the point
  - a. Which lies on both the axes?
  - b. Whose abscissa is -4 and lies on X-axis?
  - c. Which is 5 units far from X-axis & 2 units far from Y-axis and lies on 1<sup>st</sup> quadrant?
18. Plot the points A  $(4,0)$  & B  $(0,4)$ . Join A,B to origin O. Find the area of triangle OAB.
19. Two sides AB, BC & median AM of  $\Delta ABC$  are respectively equal to sides PQ, QR & median PN of  $\Delta PQR$ . Show that  $\Delta ABC \cong \Delta PQR$ .

20. In the given figure,  $l \parallel m$ . Prove that  $\angle a + \angle b - \angle c = 180^\circ$ .



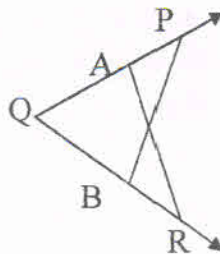
21. In a rectangular field of dimension 50m x 30m, a triangular park is constructed. If the dimensions of the park are 14m, 15m & 13m, find the area of the remaining field.
22. Find the area of an equilateral triangle of side measure '2b' units by using Heron's formula.

**Section: D**

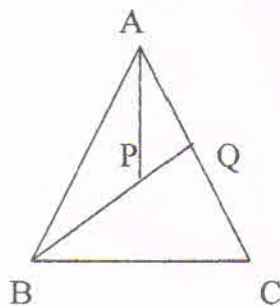
(4 X 8 = 32)

23. Simplify  $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2}$

24. In the given figure,  $PQ=QR$ , &  $\angle PAR = \angle RBP$ . Prove that  $AR = PB$ .

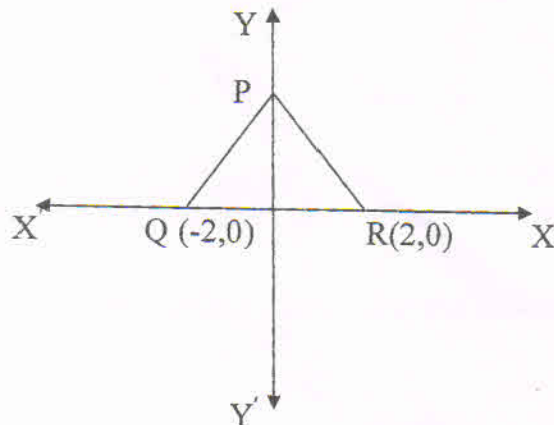


25. A triangle and a parallelogram have the same base and same area. If the sides of the triangle are 13 cm, 14 cm and 15 cm and the parallelogram stands on the base 14 cm. Find the height of the parallelogram.
26. The sides AB, AC of a  $\Delta ABC$  are equal and 'P' is any point within the triangle on the bisector of  $\angle BAC$ . BP produced meets AC in 'Q'. Prove that  $BP > PQ$ .





27. In the given figure, PQR is an equilateral triangle with coordinates Q & R as (-2,0) & (2,0) respectively. Find the coordinate of the vertex of point P.



28. A field is in the shape of a trapezium, its parallel sides are 25m & 10m and the non-parallel sides are 14m & 13m. Find the area of the field.
29. For spreading the message "Save Environment, Save Future", a rally was organised by some students of a school. They were given triangular cardboard pieces ABC which they divide into 2 parts by drawing the angle bisectors BO & CO of base angle B and C. Prove that  $\angle BOC = 90^\circ + \frac{1}{2}\angle A$ . What is the benefits of these types of rallies?
30. BE and CF are two equal altitudes of a  $\Delta ABC$ . Using RHS congruence rule, prove that the triangle is isosceles.

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