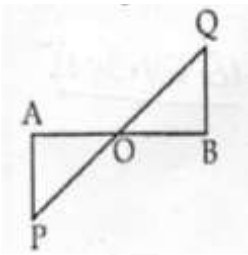
SUMMATIVE ASSESSMENT – I, 2015-16 **Question paper - 05**

SDV MATHEMATICS Class – IX LORERPZ

Section-A



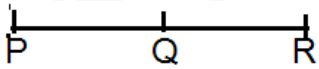
1. Find the value of $(14641)^{0.25}$

2. Give the degree of the polynomial p(x) = (x —1)(x— 2) + (2— x) (3 — x)

3. In the given figure, O is the mid-point of AB and <BQO= <APO, then <OAP is equal to which angle?

4. What are the coordinates of the point (s) which lie on positive direction of x-axis and 5 units away from the origin?

SECTION - B



5. If z = 0.064, then find the value of $\left(\frac{1}{z}\right)^3$ 6 .Factorise : $3x^2 + 11x - 4$

7. If P, Q and R are three points on a line and Q lies between P and R, then prove that PQ + QR = PR

8. Plot A(4, 5) on the graph paper. Also, plot the reflections of this point in x- axis and y - axis.

10. If the sides of a triangle are 26cm, 28 cm and 30 an, find the area of the triangle.

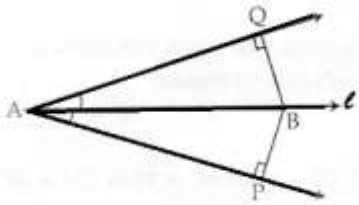
SECTION-C

11. Simplify : $\frac{1}{2}\sqrt{146} - \sqrt{\frac{27}{2}}$ 12. Rationalise the denominator of , $\frac{4}{2+\sqrt{3}+\sqrt{7}}$

13. Find the product of $(a - \frac{1}{a})(a + \frac{1}{a})(a^2 + \frac{1}{a^2})(a^4 + \frac{1}{a^4})$ using a suitable identity:

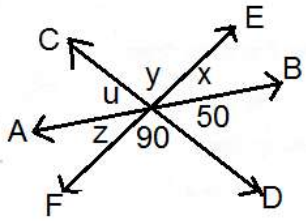
14. Using a suitable identity, evaluate: $(-28)^3 + (9)^3 + (19)^3$

15. Write Euclid's Fifth Postulate. Does this postulate imply the existence of Parallel lines? Explain.



16. In the given figure, line l is the bisector of an angle < A and B is any point on l. BP and BQ are perpendiculars from B to the arms of <A. Show that (i) ΔAPB ≅ Δ AQB and (ii) BP= BQ.

17. Three lines AB, CD and EF meat at a point o, forming angles as shown in the figure. Find the values of x, y, z and u.



18. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 3 : 2, then find the greater of the two angles.

19. Plot a point P(2, 4) on the graph paper. Now, plot reflections of P in x-axis and y-axis and 3 denote them as Q and It respectively. Name the type of triangle PQR so formed.

SECTION-D

21. Express $0.3\overline{178}$ in the form of p/q .

22. Give an example of two irrational numbers whose: (i) difference is an irrational number (iii) product is an irrational number (ii) sum is an irrational number (iv) division is an irrational number. Justify also.

23. If the polynomial $5x^3 + 4x^2 - 31x + a$, is exactly divisible by $x - 2$, then find the value of a. Hence factorise the polynomial.

24 If $x + \frac{1}{x} = 6$, find the value of $x^4 + \frac{1}{x^4}$

25. If x + 4 is a factor of the polynomial $x^3 - x^2 - 14x + 24$, find its other factors.

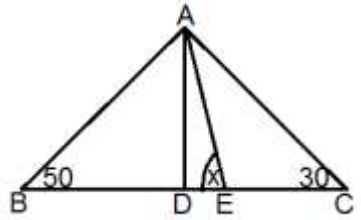
26 If $x = 2 - y$, then show that $x^3 + 6xy + y^3 - 8 = 0$

27. Rehman and Prakash contributed equal amount towards Prime Minister Relief fund. Prakash. and Rahul contributed equal amount towards Prime Minister Relief fund. If Rahul Contributed Rs. 500 how much Rehman contributed ? What value they all are exhibiting by doing so ? Which Euclid Axiom help in reaching the correct answer ? State any one more Euclid Postulate.

28 "A square is a **polygon** made up of four **line segments** out of which, length of three line segments are 4 equal to the length of fourth one and all its **angles** are **right angles**". Define the terms used In this definition which have been highlighted/underlined.

29. If two parallel lines are intersected by a transversal, prove that the bisectors of two pairs of interior angles form a rectangle.

30. In the given figure, find the value of x, if AE is the bisector of angle A of the triangle ABC and AD ⊥ BC.

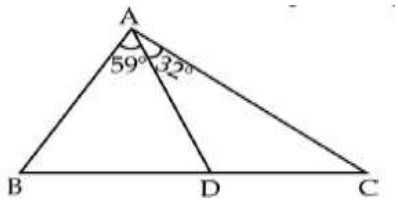


31. If two isosceles triangles have a common base, prove that the line joining their vertices bisects them at right angles.

Extra: 1. Prove that $(x + y)^3 - (x-y)^3 - 6y(x^2 - y^2) = 8y^3$.

2. if $x = \frac{\sqrt{a+1} + \sqrt{a-1}}{\sqrt{a+1} - \sqrt{a-1}}$ then show that $x^2 - 2ax + 1 = 0$

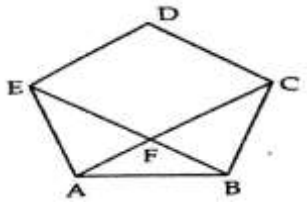
3. In the given figure AD = BD. Prove that BD < AC.



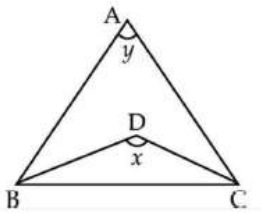
4. Show that $\sqrt{x^{-1}y^{-1}} \cdot \sqrt{xy} - \frac{1}{\sqrt{x^{-1}y^{-1}}} \cdot \frac{1}{\sqrt{xy}} = 0$

5. Show that $(a^{x-y})^{X+y} \ (a^{y-z})^{y+z} \ (a^{Z-X})^{Z+X} = 1$

6. In given figure, ABCDE is regular pentagon , Lines BE and AC intersect at F.
prove that (i) AC II ED (ii) FCDE is Rhombus



7. In ABC, BD and CD are internal bisector of <B and <C respectively. Prove that 180 + y = 2x.



8. If $a^2 + b^2 + c^2 = 90$ and $a + b + c = 20$ then find value of $ab + bc + ca$

9. Simplify: $\sqrt[3]{\sqrt[2]{y^3}}$ and express the result in the form of a power of y

10.Factorize: $(x^2 - y^2)^3 - (y^2 - z^2)^3 - (z^2 - x^2)^3$

11.Simplify : $\frac{\sqrt[5]{p^3 q^{-2} r^{-4}}}{\sqrt[5]{p^8 q^3 r^{-9}}}$

12. if $x = \frac{\sqrt{p+2q} + \sqrt{p-2q}}{\sqrt{p+2q} - \sqrt{p-2q}}$ then show that $q(x^2 + 1) = px$