

**ST. ARNOLD'S CENTRAL SCHOOL, PUNE**  
**PERIODIC TEST-2, 2018 - 2019**  
**SUBJECT - MATHEMATICS**

**STD - IX**

**MM : 80**

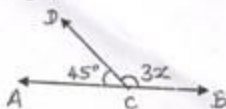
**General Instructions:**

- (i) All questions are compulsory.
- (ii) The question paper consists of 30 questions divided into 4 Sections A, B, C and D.
- (iii) Section A contains 6 questions of 1 mark each, Section B contains 6 questions of 2 marks each, Section C contains 10 questions of 3 marks each and Section D contains 8 questions of 4 marks each.
- (iv) Use of calculators is not permitted.

**SECTION - A**

**Question numbers 1 to 6 carry 1 mark each:**

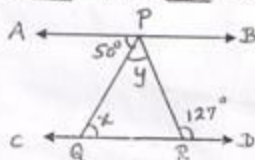
1. Is  $3\sqrt{t} + t\sqrt{2}$  a polynomial in one variable? Justify your answer. (1)
2. What is the value of  $(625)^{1/4}$ ? (1)
3. What is the area of an equilateral triangle whose side is 4cm?  $\star$  (1)
4. Equal angles of an isosceles triangle are  $50^\circ$  each. Find the measure of the third angle. (1)
5. In  $\triangle ABC$ , if  $\angle A = 35^\circ$  and  $\angle B = 65^\circ$ , then find the longest side of the triangle. (1)
6. Find the value of  $x$  from the figure: (1)



**SECTION - B**

**Question numbers 7 to 12 carry 2 marks each:**

7. Find the value of  $k$  if  $(x + k)$  is the factor of the polynomial  $x^3 + kx^2 - 2x + k + 5$  (2)
8. What is the coefficient of  $x^2$  in  $(2x^2 - 5)(4 + 3x^3)$ ? (2)
9. What is the value of  $16^{-1/4} \times \sqrt[4]{16}$ ? (2)
10. Define: a. Parallel lines b. Perpendicular lines. (2)
11. Construct an angle of  $135^\circ$  (2)
12. In the figure,  $AB \parallel CD$ .  $\angle APQ = 50^\circ$  and  $\angle PRD = 127^\circ$ . Find the values of  $x$  and  $y$ . (2)



### SECTION - C

Question numbers 13 to 22 carry 3 marks each:

13. Simplify:  $\frac{2+\sqrt{3}}{2-\sqrt{3}} + \frac{2-\sqrt{3}}{2+\sqrt{3}}$  (3)

14. The polynomials  $ax^2 + 3x - 13$  and  $2x^2 - 5x + a$  when divided by  $(x - 2)$  leaves the same remainder. Find the value of  $a$ . (3)

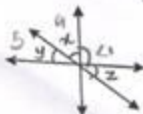
15. If  $a, b$  and  $c$  are all non-zero and  $a + b + c = 0$ , Prove that  $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab} = 3$  (3)

16. Radha has a piece of land which is in the shape of a rhombus. She wants her daughter and son to work on the land and produce different crops to suffice the needs of their family.

She divided the land into two equal parts. If the perimeter of the land is 400m and one of its diagonals is 160m, how much area will each get? (3)

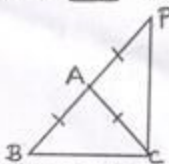
17. Prove that in an isosceles triangle, angles opposite to equal sides are equal (3)

18. In the given figure, if  $x : y = 4 : 5$ , then, what is the measure of  $z$ ? (3)

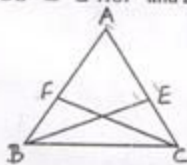


19. Construct a right-angled triangle with base 3.5cm and sum of other side and the hypotenuse is 5.5cm. (3)

20. In the given figure, ABC is a triangle in which  $AB = AC$ . The side BA is produced to P such that  $AB = AP$ . Prove that  $\angle BCP = 90^\circ$  (3)

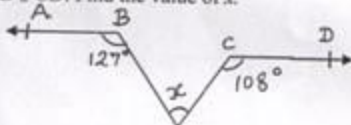


21. ABC is a triangle in which the altitudes BE and CF to the sides AC and AB respectively are equal. Show that  $\triangle ABE \cong \triangle ACF$  and  $\triangle ABC$  is an isosceles triangle. (3)



22. In the given figure,  $AB \parallel CD$ . Find the value of  $x$ .

(3)



**SECTION - D**

Question numbers 23 to 30 carry 4 marks each:

23. Factorise the polynomial  $x^3 + 13x^2 + 32x + 20$  (4)

24. If  $x = 2 + \sqrt{3}$ , find the value of  $x^2 + \frac{1}{x^2}$  (4)

25. The sides EF, FD and DE of a  $\triangle DEF$  are produced in forming three exterior angles  $\angle DFP$ ,  $\angle EDQ$ ,  $\angle FER$  respectively. Prove that  $\angle DFP + \angle EDQ + \angle FER = 360^\circ$ . (4)

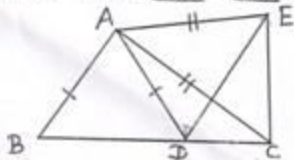
26. Bisectors of  $\angle B$  and  $\angle C$  of a  $\triangle ABC$  intersect each other at the point O. Prove that

$$\angle BOC = 90^\circ + \frac{1}{2}\angle A$$

(4)

27. In the figure,  $AC = AE$ ,  $AB = AD$  and  $\angle BAD = \angle EAC$ . Show that  $BC = DE$ .

(4)



28. ABCD is a parallelogram in which diagonals AC and BD intersect at O. Prove that

$$2(AC + BD) > AB + BC + CD + DA$$

(4)

29. State and prove the angle sum property of a triangle. (4)

30. Construct a triangle PQR with  $\angle P = 45^\circ$ , base  $PQ = 8.4\text{cm}$  and  $PR - QR = 2.8\text{cm}$ . (4)