

**ATOMIC ENERGY EDUCATION SOCIETY**  
**PERIODIC TEST – II (2018-19)**

**CLASS: IX**  
**SUBJECT: MATHEMATICS**

**DATE OF EXAM: 03-10-18**

**TIME: 3 HOURS**  
**MARKS: 80**

**GENERAL INSTRUCTIONS:**

1. All questions are compulsory.
2. The question paper consists of 30 questions divided into 4 sections A,B,C,and D.  
Section A comprises 6 questions of 1 mark each.  
Section B comprises 6 questions of 2 marks each.  
Section C comprises 10 questions of 3 marks each  
Section D comprises 8 questions of 4 marks each.
3. Use of calculator is not permitted.

**Section-A**

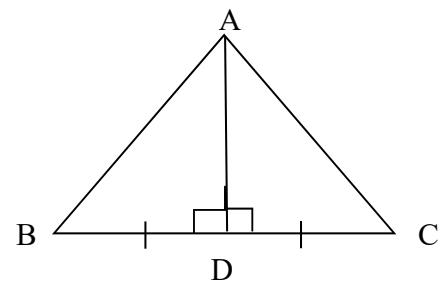
**( 6 x 1M= 6 Marks)**

1. Write the rational number  $54/100$  in decimal form.
2. Find the value of  $x$ , if  $34 \times 35 = (3^3)^x$
3. Find the value of the polynomial  $5x-4x^2+3$  at  $x=0$ .
4. Find the value of  $K$ , if  $x=2, y=1$  is a solution of the equation  $2x+3y=K$ .
5. If an angle is 160 more than its complement, find its measure.
6. In  $\Delta ABC$ ,  $\angle B = 105^\circ$  and  $\angle C = 50^\circ$ , find  $\angle A$ .

**Section-B**

**( 6 x 2M= 12 Marks)**

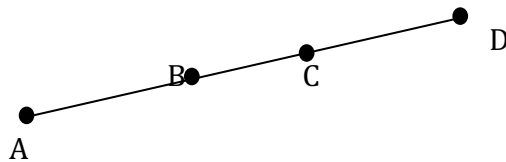
7. Express  $0.\overline{588}$  in the form of  $p/q$ .
8. If  $a^2 + b^2 + c^2 = 250$  and  $ab + bc + ca=3$ , then find  $a + b + c$ .
9. Find two solutions of the equation  $2x-3y=12$ .
10. If the point  $(3,4)$  lies on the graph of the equation  $3y = ax + 7$ , find the value of  $a$ .
11. The supplementary angles are in the ratio 4:5, find the angles.
12. In  $\Delta ABC$ ,  $AD$  is the perpendicular bisector of  $BC$  (See the figure).  
Show that  $\Delta ABC$  is an Isosceles triangle in which  $AB=AC$



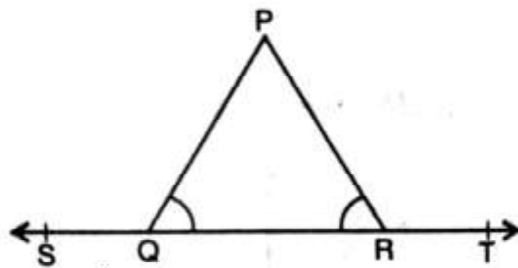
Section-C

(10 x 3M= 30 Marks)

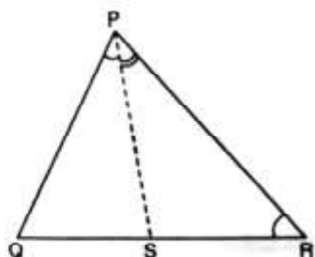
13. Represent  $\sqrt{5.3}$  on the number line.
14. Show that  $(x-2)$  is a factor of the polynomial  $f(x) = 2x^3 - 3x^2 - 17x + 30$ .
15. In which quadrant do the given points lie?  
 i)  $(4,-2)$       ii)  $(-3,7)$       iii)  $(-1,-2)$
16. Solve the equation  $2x + 1 = x - 3$  and represent the solutions  
 i) On the number line      ii) In the Cartesian plane.
17. Write 3 Euclid's axioms.
18. In the given figure, if  $AC=BD$ , then prove that  $AB=CD$



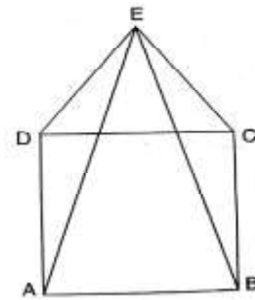
19. In figure  $\angle PQR = \angle PRQ$ , then prove that  $\angle PQS = \angle PRT$



20. In  $\Delta ABC$ , if  $3\angle A = 4\angle B = 6\angle C$ , Calculate  $\angle A$ ,  $\angle B$  and  $\angle C$ .
21. In figure,  $PR > PQ$  and PS bisects  $\angle QPR$ . Prove that  $\angle PSR > \angle PSQ$



22. ABCD is a square and DEC is an equilateral triangle.  
Prove that AE = BE

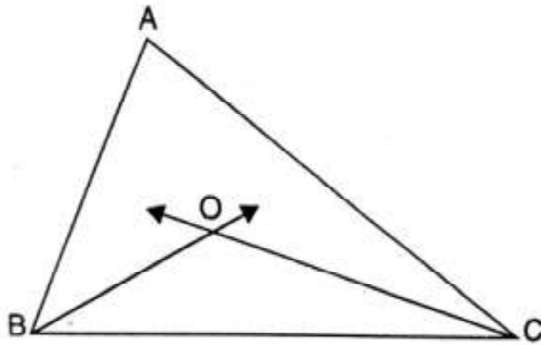


**Section - D**

**8 x 4M = 32 Marks**

23. Find the values of a and b,  $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - b\sqrt{3}$
24. If  $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$  and  $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ , find the value of  $a^2 + b^2 - 5ab$
25. Verify that  $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z) [(x - y)^2 + (y - z)^2 + (z - x)^2]$ .
26. i) Plot the points A (1, 4.5), B (-1, 0), C (1, -4.5) and D (3,0) on a graph paper.  
ii) Name the figure ABCD.  
iii) Find the area of ABCD.
27. In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius.  $F = \frac{9C}{5} + 32$   
i) Draw the graph of the linear equation above using Celsius for X-axis and fahrenheit for Y-axis  
ii) If the temperature is 30°C, What is the temperature in Fahrenheit?  
iii) Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it.

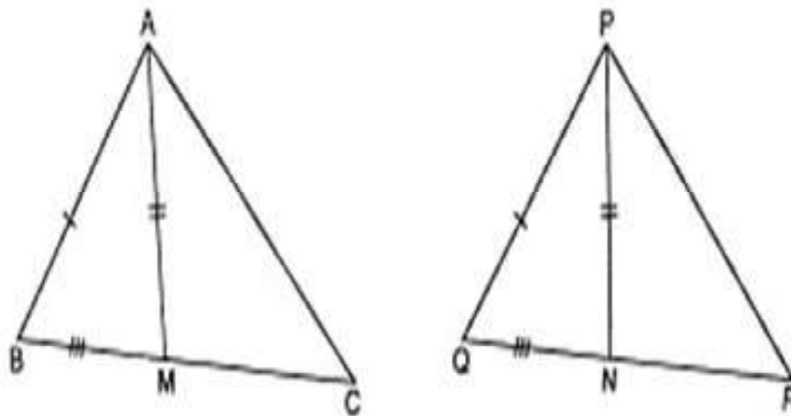
28. In the figure, the bisectors of  $\angle ABC$  and  $\angle BCA$  intersect each other at the point O.  
 Prove that  $\angle BOC = 90^\circ + \frac{1}{2} \angle A$



29. Prove that the sum of any two sides of a triangle is greater than the third side.  
 30. Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of triangle PQR (see figure).

Show that

- i)  $\triangle ABM \cong \triangle PQN$
- ii)  $\triangle ABC \cong \triangle PQR$



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