

**ATOMIC ENERGY CENTRAL SCHOOL NO. 3 RAWATBHATA**

**CLASS 09 - MATHEMATICS**

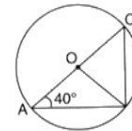
**PT-3 (2019-20)**

Time Allowed: 1 hour and 30 minutes

Maximum Marks: 40

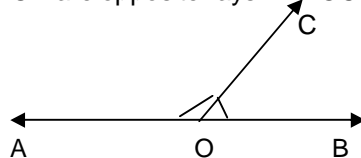
**Section A**

1. If  $x = 2 + \sqrt{3}$ , then  $\frac{1}{x} + \frac{1}{x}$ 
  - a) 4
  - b) -5
  - c) -4
  - d) 5
  
2. The value of  $0.75 \times 0.75 - 0.75 \times 0.25 + 0.25 \times 0.25$  is [1]
  - a) 0
  - b) 1
  - c) 2
  - d) -1
  
3. The co-ordinates of a point above the x-axis lying on y-axis at a distance of 4 units are [1]
  - a) (0, -4)
  - b) (4, 0)
  - c) (0, 4)
  - d) (-4, 0)
  
4. A polygon is a closed figure made up of [1]
  - a) three line segments only
  - b) none of these
  - c) three or more line segments
  - d) two line segments
  
5. If two angles are supplementary and the larger is  $20^\circ$  less than three times the smaller, then the angles are :- [1]
  - a)  $72^\circ, 17^\circ$
  - b)  $140^\circ, 40^\circ$
  - c)  $130^\circ, 50^\circ$
  - d)  $62^\circ, 27^\circ$
  
6. If  $\angle OAB = 40^\circ$ , then the measure of  $\angle ACB$  is [1]
  - a)  $20^\circ$
  - b)  $40^\circ$
  - c)  $80^\circ$
  - d)  $50^\circ$



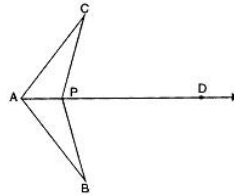
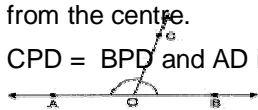
**Section B**

7. Simplify:  $4\sqrt{28} \div 3\sqrt{7}$  [2]
8. Construct the angle of the measurement  $90^\circ$  [2]
9. In figure, OA and OB are opposite rays. If  $\angle BOC = 75^\circ$ , find  $\angle AOC$  and If  $\angle AOC = 110^\circ$ , find  $\angle BOC$  [2]



10. The radius of a circle is 13 cm and the length of one of its chords is 24 cm. Find the distance of the chord from the centre. [2]

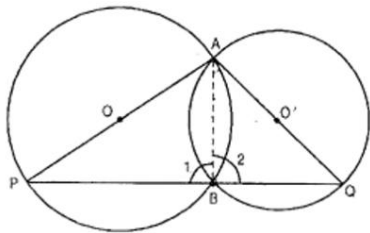
11. In figure,  $\angle CPD = \angle BPD$  and AD is the bisector of  $\angle BAC$ . Prove that  $\angle DAC = \angle DAB$  and hence  $CP = BP$ . [2]



### Section C

12. ABC is an isosceles triangle with  $AB = AC$  and BD and CE are its two medians. Show that  $BD = CE$ . [3]

13. If circles are drawn taking two sides of a triangle as diameters, prove the point of intersection of these circles lie on the third side: [3]



14. The taxi fare in a city is as follows: For the first kilometre, the fare is ₹8 and 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. [3]

15. D is a point on the circumcircle of  $\triangle ABC$  in which  $AB = AC$  such that B and D are on opposite sides of line AC. If CD is produced to a point E such that  $CE = BD$ , prove that  $AD = AE$ . [3]

### Section D

16. The polynomial  $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$  when divided by  $x + 1$  leave remainder 19. Find the remainder when  $p(x)$  is divided by  $x + 2$ . [4]

17. AB and CD are two parallel lines and a transversal l intersects AB at X and CD at Y. Prove that the bisectors of the interior angles form a rectangle. [4]

18. Prove that parallelograms on the same base and between the same parallels have the same area. [4]