CBSE – 2013 (SA - 2) CHAPTER WISE MOCK TEST
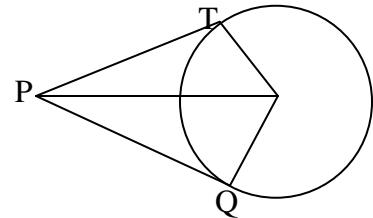
Time : 1.5hrs   **Marks : 49**

Section – A (1* 5 = 5)

1. If the sum of the roots of the equation $3x^2 - (3k-2)x - (k-6) = 0$ is equal to the product of its roots, then $k = ?$
   (a) 1   (b) -1   (c) 0   (d) 2

2. If the numbers a, b, c, d, e form an AP, then the value of $a - 4b + 6c - 4d + e$ is
   (a) 1   (b) 2   (c) 0   (d) none of these

3. If PQ and PT are tangents to a circle with centre O and radius 5 cm. If PQ = 12 cm. , then perimeter of quadrilateral PQOT is

   (a) 24cm   (b) 34cm   (c) 17cm   (d) 20cm

4. A circle is inscribed in a triangle with sides 8, 15 and 17cm. The radius of the circle is
   (a) 6cm   (b) 5cm   (c) 4cm   (d) 3cm

5. An electrician has to repair an electric fault on a pole of height 6m. he needs to reach a point 2.54m below the top of the pole. What should be the length of ladder that he should use which when inclined at an angle of 60^0 to the horizontal would enable him to reach the desired point ? (use $\sqrt{3} = 1.73$)
   (a) 3.46m   (b) 4m   (c) 5.19   (d) 7.5m

Section – B (2* 4 = 8)

6. If the roots of the equation $(a-b)x^2 - (b-c)x - (c-a) = 0$ are equal, prove that $b + c = 2a$.

7. Which term of the AP 24, 21, 18, 15,… is the first negative term?

8. A circle is touching the side BC of a $\triangle ABC$ at P and Is touching AB and AC when produced at Q and R respectively.

   Prove that, AQ = $\frac{1}{2}$ (Perimeter of $\triangle ABC$)
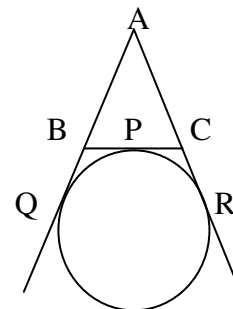
9. The angle of elevation of the top of a tower, at a distance of 150 m from its foot on a horizontal plane, is found to be 60°. Find the height of the tower.

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Section – C (3* 4 = 12)

10. If α, β are the roots of the equation $x^2 - 3x + 2 = 0$, then find the equation whose roots are $\alpha + 1$, $\beta + 1$.

11. If the 8th term of an AP is 31 and its 15th term is 16 more than the 11th term, find the AP.

OR

Find the sum of all odd integers between 2 and 100 which are divisible by 3.

12. In the adjoining figure, PA and PB are tangents drawn from an external point P to a circle with centre O.
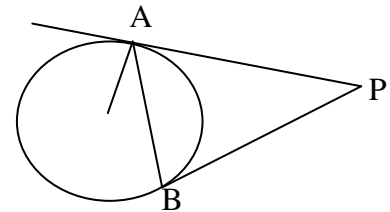
Prove that $\angle APB = 2\angle OAB$.

13. Draw a pair of tangents to a circle of radius 5 cm, which are inclined to each other at an angle of 60°.

Section – D (4* 6 = 24)

14. A plane left 30 minutes later than the schedule time and in order to reach its destination 1500 km away in time, it has to increase its speed by 250 km/h from its usual speed. Find its usual speed.

OR

Solve the equation for 'x' by using factorization method: $4x^2 - 4a^2x + (a^4 - b^4) = 0$.

15. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segments joining the points of contact to the centre.

16. Construct an isosceles triangle, whose base is 8 cm and altitude 4 cm and another triangle 3/2 times of corresponding sides of the isosceles triangle.

17. Find the sum :(-5) + (-8) + (-11) + ………… + (-230)

18. A bird was sitting on the top of a tree, which is 80m high. The angle of elevation of the bird, from a point of the ground was 45^0. The bird flew away horizontally and remained at a constant height. After 2 second the angle of elevation of the bird from the point of observation became 30^0. Find the speed with which the bird flew away.

19. Two concentric circles are of radii 5 cm and 3 cm and centre at O. two tangents PA and PB are drawn to two circles from an external point P such that AP = 12 cm. Find BP.

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