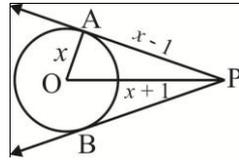




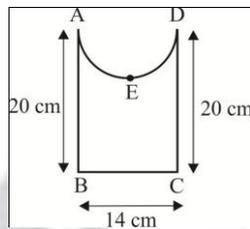
SECTION A [1 Mark each]

- Q1 In fig. PA and PB are tangents to the circles with centre O. Find the value of x .



- Q2 If the circumference is numerically equal to 3 times the area of a circle, then find the radius of the circle.

- Q3 Find the perimeter of the given figure, where \widehat{AED} is a semicircle and ABCD is a rectangle. (Use $\pi = 22/7$)

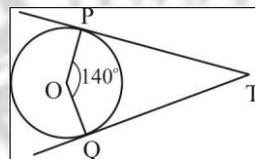


- Q4 The area of a circle is 220cm^2 , find the area of the square inscribed in it.

SECTION B [2 Mark each]

- Q5 Find the length of radius of a circle whose length of tangent from an external point is 24cm and the distance of point from where tangent is drawn from the centre is 26cm.

- Q6 In the given fig. if TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 140^\circ$, find $\angle PTQ$.



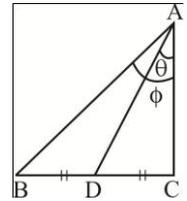
- Q7 The minute hand of a clock is 10 cm long. Find the area swept by the minute hand between 9:00 am. And 9:35 am.

(Use $\pi = 22/7$)

- Q8 The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

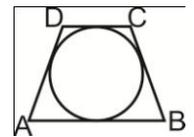
- Q9 The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 30° . Find the height of the tower.

- Q10 From the figure, prove that $\frac{\tan \theta}{\tan \phi} = \frac{1}{2}$ and it is given that 'D' be the mid - point of BC.

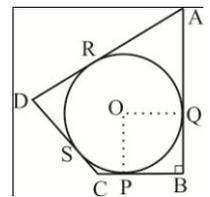


SECTION C [3 Mark each]

- Q11 In fig, a circle touches all the four sides of a quadrilateral ABCD, whose sides are $AB = 6\text{cm}$, $BC = 7\text{cm}$ and $CD = 4\text{cm}$. Find AD.



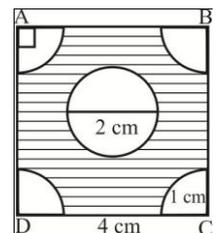
- Q12 In fig. a circle is inscribed in a quadrilateral ABCD in which $\angle A = 90^\circ$. If $AD = 23\text{cm}$, $AB = 29\text{cm}$ and $DS = 5\text{cm}$, find the radius r of the circle.



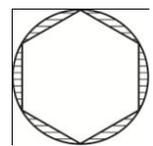
- Q13 If all the side of a parallelogram touch a circle, show that the parallelogram is a rhombus.

- Q14 A circle touches all the four sides of a quadrilateral ABCD. Prove that: $AB + CD = BC + DA$.

- Q15 ABCD is a square of side 4 cm. At each corner of the square a quarter circle of radius 1 cm and the centre of square, a circle of radius 1 cm are drawn, as shown in the figure. Find the area of the shaded region. (Use $\pi = 3.14$)



- Q16 A round table cover has six equal designs as shown in fig. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of Rs. 3.50 per cm^2 [use $\sqrt{3} = 1.7$]



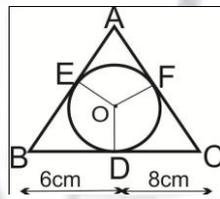
- Q17 A steel wire when bent in the form of a square encloses an area of 121 sq. cm. If the same wire is bent into the form of a circle, find the area of the circle.



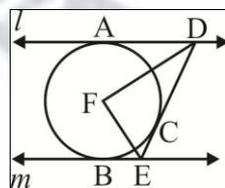
- Q18 A tower stands vertically on the ground. From a point on the ground 30 metres away from the foot of the tower, the angle of elevation of the top of the tower is 60° . Find the height of the tower.
- Q19 The angle of elevation θ of a vertical tower from a point A on the ground is such that its tangent is $\frac{5}{12}$. On walking 192 m towards tower in the same straight line, the tangent of the angle of elevation ϕ formed to be $\frac{3}{4}$, find the height of the tower.
- Q20 The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high, find the height of the building.

SECTION D [4 Mark each]

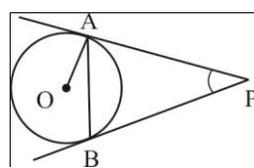
- Q21 A triangle ABC is drawn to circumscribe a circle of radius 4cm such that the segments BD and DC into which BC is divided by the point of contact D are of length 8cm and 6cm respectively. Also the area of the triangle is 84cm^2 . Find the sides AB and AC.



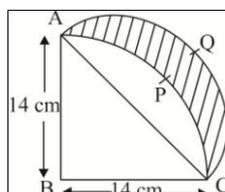
- Q22 In fig. l and m are two parallel tangents at A and B. The tangent at C makes an intercept DE between l and m . Prove that $\angle DFE = 90^\circ$.



- Q23 In fig. two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$.



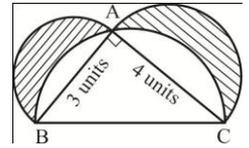
- Q24 ABCP is a quadrant of a circle of radius 14 cm. With AC as diameter, a semi –



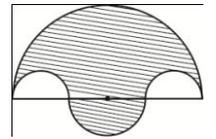
circle is drawn. Find the area of the shaded portion.

- Q25 The ratio of the outer and inner perimeters of a circular path is 23 : 22. If the path is 5 m wide, then find the diameter of the inner circle.

- Q26 In fig. ABC is a right – angled triangle, right – angled at A. Semicircles are drawn on AB, AC and BC as diameters. Find the area of the shaded region.



- Q27 In fig. the boundary of shaded region consists of four semicircular arcs, two smallest being equal. If diameter of the largest is 14 cm and that of the smallest is 3.5 cm, calculate the area of the shaded region.



- Q28 The angle of elevation of a Jet plane from a point P, on the ground is 60° . After flight of 15 seconds, the angle of elevation changes to 30° . If the Jet plane in flying at a constant height of $1500\sqrt{3}\text{m}$. Find the speed of the Jet plane.

- Q29 A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30° , which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60° . Find the time taken by the car to reach the foot of the tower from this point.

- Q30 The angle of elevation of a cloud from a point 60m above a lake is 30° and the angle of depression of the reflection of the cloud in the lake is 60° . Find the height of the cloud.

- Q31 A boy on horizontal plane finds bird flying at a distance of 100m from him at an elevation of 30° . A girl standing on the roof of 20 metre high building, finds the angle of elevation of the same bird to be 45° . Both the boy and the girl are on opposite sides of the bird. Find the distance of bird from the girl. (use $\sqrt{2} = 1.41$)



ANSWER

1. 4cm
2. $\frac{2}{3}$ units
3. $(7\pi + 54)$ cm
4. 140cm^2
5. 10cm
6. 40°
7. 183.33cm^2
8. 15.6cm^2
9. $10\sqrt{3}$ m
11. 3cm
12. 11 cm
15. 9.72cm^2
16. Rs 162.68
17. 154 sq. cm
18. 51.960 m
19. 180 m
20. $16\frac{2}{3}$ m
21. AB = 13cm, AC = 15cm
24. 98cm^2
25. 220 m
26. 6 sq. units
27. 86.63cm^2
28. 720 km/h
29. 3 seconds
30. 120 m
31. 42.3 m

