RAVI TEST PAPERS & NOTES, WHATSAPP 8056206308

10TH MATHS PREVIOUSLY ASKED Areas Related to Circles Surface Areas and Volumes

10th Standard

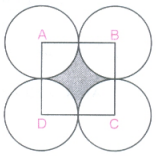
Maths

2 Marks 22 x 2 = 44

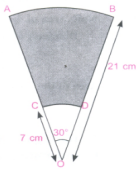
1) A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1cm and the height of the cone is equal to its radius.Find the volume of the solid in terms of π

2) Rachel, an engineering student, was asked make a model shaped like a cylinder with two cones attached at its two ends by using a thin aluminium sheet.The diameter of the model is 3cm and its length is 12cm.
If each cone has a height of 2 cm, find the volume of air contained in the model that Rachel made.(Assume the outer and inner dimensions of the model to be nearly the same.)

3) In the figure, ABCD is a square of side 14 cm. With centres A, B, C and D, four circles aer drawn such that each circle touch externally two of the remaining three circles. Find the area of the shaded region.



4) AB and CD are respectively arcs of two concentric circles of radii 21 cm and 7 cm and center O (see figure). If find the area of the shaded region.



5) If π taken as $\frac{22}{7}$,then find the distance (in metres) covered by a wheel of diameter 35cm, in one revolution.

6) Find the perimeter of a quadrant of a circle of radius 'r'.

7) the length of a rope by which a cow is tethered is increased from 16m to 23m.How much additional area can the cow graze now?

8) The diameter of a wheel is 1.26 m. What the distance covered in 500 revolutions?

9) Two cylindrical cans have equal bass areas. If one of the can is 15cm high and other is 20cm high, find the ratio of their volumes.

10) Two cubes each of volume 27cm^3 are joined end to end to form a solid.Find the surface area of the resulting cuboid.

11) A solid is in the shape of a cone mounted on a hemisphere of same base radius.If the curved surface areas of the hemispherical part and the conical part are equal, then find the ratio of the radius and the height of the conical part.

12) A solid sphere of radius 10.5cm is melted and recast into smaller solid cones, each of radius 3.5cm and height 3cm.Find the number of cones so formed.

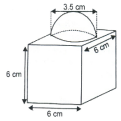
13) A military tent of height 8.25 m is in the form of a right circular cylinder of base diameter 30 m and height 5.5 m surmounted by a right circular cone of same base radius. Find the length of the canvas use in making the tent, if the breadth of the canvas is 1.5 m

14) If a marble of a radius 1.4 cm is put into a cylindrical cup full of water of radius 7 cm and height 4 cm, then how much water flows out of the cup ?

15) Find the curved surface area of a right circular cone of height 15 cm and base diameter 16 cm.

16) Find the volume of the largest sphere that can be cut from cylindrical log of wood of base radius 1 m and height 4 m.

17) The decorative block shown in fig. is made of two solids - a cube and a hemisphere. The base of the block is a cube with edge 6 cm, and the hemisphere fixed on the top has a diameter of 3.5 cm. Find the total surface area of the block. $[Take \quad \pi = \frac{22}{7}]$

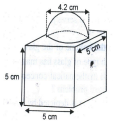


18) A solid is in the shape of a right-circular cone surmounted on a hemisphere, the radius of each of them being 3.5 cm and the total height of solid is 9.5 cm. Find the volume of the solid.

19) From a circular cylinder of diameter 10 cm and height 12 cm, a conical cavity of the same base radius and of the same height is hollowed out. Find the volume of the remaining solid. $[Use \quad \pi = 3.14]$

20) A building is in the form of a cylinder surmounted by a hemispherical dome as shown in the figure. The base diameter of the dome is equal to $\frac{2}{3}$ of the total height of the building. Find the height of the building, if it contains $67\frac{1}{21}m^3$ of air.

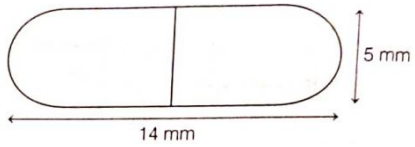
21) Given figure shows a decorative block which is made of two solids - a cube and a hemisphere. The base of the block is a cube with edge 5 cm and the hemisphere, fixed on the top, has a diameter of 4.2 cm. Find the total surface area of the block.
$[Take \quad \pi = 22/7]$



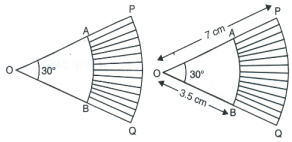
22) A cylindrical vessel with internal diameter 10 cm and height 10.5 cm is full of water. A solid cone of base diameter 7 cm and height 6 cm is completely immersed in water. Find the volume of :
(i) water displaced out of the cylindrical vessel.
(ii) water left in the cylindrical vessel.
$[Take \quad \pi = \frac{22}{7}]$

3 Marks 13 x 3 = 39

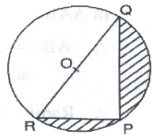
23) A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends (see below figure). The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.



24) In fig., Pq and AB respectively the arcs of two concentric circles of radii 7cm and 3.5cm and centre O.If $\angle POQ = 30^0$, then find the area of the shaded region.[Use $\pi = \frac{22}{7}$]

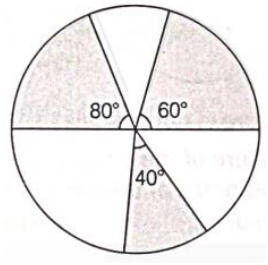


25) Find the area of shaded region in figure, if PQ=16cm, PR=12cm and O is the centre of the circle.[π=3.14]

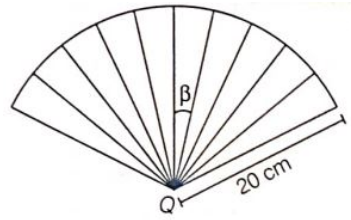


26) The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand from 9 a.m. to 9.35 a.m.

27) In the given figure, three sectors of a circle of radius 7 cm, making angles of 60°, 80° and 40° at the centre are shaded. Find the area of the shaded region.

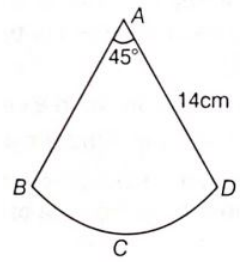


28) The figure below is a part of a circle with centre O. Its area is $\left(\frac{1250\pi}{9}\right)\ \mathrm{cm}^2$ and the 10 sectors are identical.
[Note: The figure is not to scale]
Find the value of β, in degrees. Show your steps.

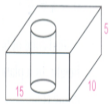


29) A car has two wipers which do not overlap. Each wipes has a blade of length 30 cm sweeping through an angle of 105°. Find the total area cleaned at each Sweep of the blades.

30) The perimeter of the sector of a circle of radius 14 cm and central angle 45° is

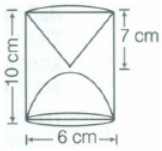


31) In figure, from a cuboidal solid metallic block of dimensions 15 cm x 10 cm x 5 cm, a cylindrical hole of diameter 7 cm is drilled out. Find the surface area of the remaining block. [Use $\pi = \frac{22}{7}$]



32) A right circular cone of radius 3 cm, has a curved surface area of 47.1 cm^2 . Find the volume of the cone. $[Use \quad \pi = 3.14]$

33) A wooden article as shown in the figure was made from a cylinder by scooping out a hemisphere from one end and a cone from the other end. Find the total surface area of the article.

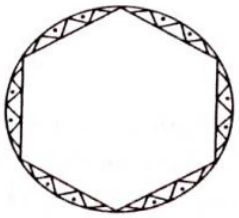


34) A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy.

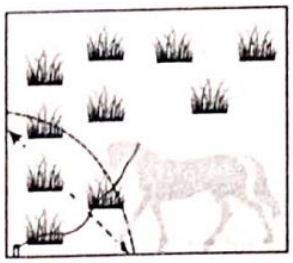
35) A tent is in the shape of a right circular cylinder upto a height of 3 m and conical above it. The total height of the tent is 13.5 m above the ground. Calculate the cost of painting the inner side of the tent at the rate of Rs 2 per m^2, if the radius of the base is 14 m.

5 Marks 14 x 5 = 70

36) A round table cover has six equal designs as shown in the figure. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of Rs. 0.35 per cm^2 . [take, $\sqrt{3}$ = 1.732]

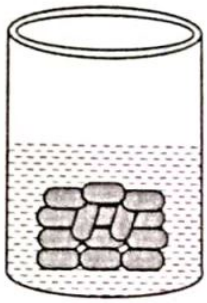


37) A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope (see figure). Find

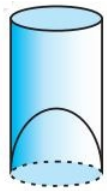


(i) the area of the part of the field in which the horse can graze.
(ii) the increase in the grazing area if the rope were 10 m long instead of 5 m. $(take, \pi = 3.14)$

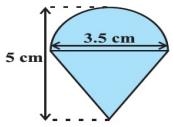
38) A gulab jamun, contains sugar syrup up to about 30% of its volume.Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5cm and diameter 2.8cm . (see figure).



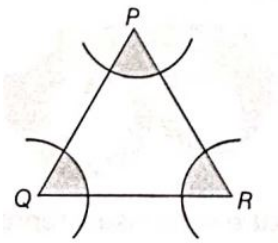
39) A juice seller was serving his customers using glasses as shown in Figure. The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10 cm, find the apparent capacity of the glass and its actual capacity. $[Use \quad \pi = 3.14]$



40) Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diameter of the top is 3.5 cm. Find the area he has to colour $(\text{Take } \pi = \frac{22}{7})$

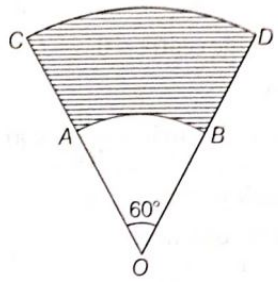


41) In the given figure, arcs have been drawn with radius 14 cm each and with centres P, Q and R. Find the area of the shaded region.



42) An umbrella has 6 ribs which are equally spaced (see figure). Assuming umbrella to be a flat circle of radius 35 cm, find the area between two consecutive ribs of the umbrella. $\left(\text{use } \pi = \frac{22}{7}\right)$

43) AB and CD are arcs of two concentric circles of radii 3.5 cm and 10.5 cm respectively and centred at O. Find the area of the shaded region, if ∠AOB = 60°. Also, find the length of arc CD.



44) From a solid cylinder whose height is 15 cm and the diameter is 16 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid. [give your answer in terms of π]

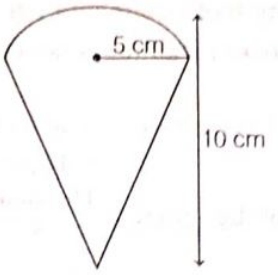
45) A solid is in the form of a right circular cone mounted on a hemisphere. The radius of the hemisphere is 2.1 cm and the height of the cone is 4 cm. The solid is placed in a cylindrical tub, full of water, in such a way that the whole solid is submerged in water. If the radius of the cylinder is 5 cm and its height is 9.8 cm, find the volume of the water left in the cylindrical tub. [Use $\pi = 22/7$]

46) A spherical glass vessel has a cylindrical neck 7 cm long, 4 cm in diameter of the spherical parts is 21 cm. Find the quantity of water it can hold. $\left(use,\ \pi = \frac{22}{7}\right)$

47) A tent is in the shape of a cylinder surmounted by a conical top. If the height and radius of the cylindrical part are 3 m and 14 m respectively and the total height of the tent is 13.5 m, find the area of the canvas required for making the tent, keeping a provision of 26 m^2 of canvas for stitching and wastage. Also, find the cost of the canvas to be purchased at the rate of Rs 500 per m^2.

48) The interior of a building is in the form of cylinder of diameter 4.3 m and 3.8 m height, surmounted by a cone whose vertical angle is a right angle.
(i) Find the area of the surface.
(ii) Also, find the volume of building. [Use π = 3.14]

49) An ice-cream filled cone having radius 5 cm and height 10 cm is as shown in the figure. Find the volume of the ice-cream in 7 such cones.



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