UNIT-5: SURFACE AREA AND VOLUME

1.1   write the formula to find curved surface area of a solid cylinder.

1.2   write the formula to find curved surface area of a solid cylinder having height "h" and radius " r".

2.1   write the formula to find total surface area of a solid cylinder.

2.2   write the formula to find total surface area of cylinder having height "h" and radius " r ".

3.1   Write the formula to find volume of cylinder.

3.2   Write the formula to find volume of cylinder having height "h" and radius " r ".

4.1   Write the formula to find curved surface area of a cone.

4.2   Write the formula to find curved surface area of cone having slant height " l " and radius " r".

5.1   Write the formula to find total surface area of cone.

5.2   Write the formula to find total surface area of cone having slant height "l" and radius " r".

6.1   Write the formula to find volume of cone.

6.2   Write the formula to find volume of cone having height "h" and radius " r".

7.1   Write the formula to find curved surface area of hemisphere.

7.2   Write the formula to find curved surface area of hemisphere having radius " r".

8.1   Write the formula to find total surface area of hemisphere.

8.2   Write the formula to find total surface area of hemisphere of radius 'r'

9.1   Write the formula to find volume of hemisphere.

9.2   Write the formula to find volume of hemisphere having radius " r".

10.1   Write the formula to find curved surface area of sphere.

10.2   Write the formula to find curved surface area of sphere having radius 'r'

10.3   Write the formula to find total surface area of sphere.

10.4   Write the formula to find total surface area of sphere having radius " r".

10.5   Write the formula to find surface area of sphere.

11.1   Write the formula to find volume of sphere.

11.2   Write the formula to find volume of sphere having radius " r".

12.1   Write the formula to find curved surface area of frustrum of a cone.

12.2   Write the formula to find curved surface area of frustrum of a cone having slant height "l" and radii "r_1" & "r_2".

13.1   Write the formula to find total surface area of frustrum of a cone.

13.2   Write the formula to find total surface area of frustrum of a cone having slant height "l" and radii "r_1" & "r_2".

14.1 Write the formula to find volume of frustrum of a cone.

14.2 Write the formula to find volume of frustrum of a   cone having height
"h" and radii "r_1" & "r_2".

Solve the following:

1.1) 1 Gulab Jamun contains sugar syrup up to about 30% of its volume. Find
approximately how much syrup would be found in 45 Gulab Jamun
shaped like a cylinder with two hemispherical ends with length 5 cm and
diameter 2.8 cm.

1.2) 45 gulab jamun in a vessel Eid gulab jamun is Gulab Jamun contains
sugar syrup up to about 30% of its volume. Each Gulab Jamun Shaped
like a cylinder with two hemispherical ends with length 5cm and diameter
2.8cm. Find the amount of sugar syrup in a vessel containing gulab
Jamun.

2.1) Rachel An engineering student was asked to make a model   shaped
like a cylinder with two   cones attached   at its two ends by using thin
aluminium sheet. The diameter of the model is 3cm and its length is
12cm. If each has a height of 2cm. 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).

2.2) Shreya is studying in 10th standard was asked to made a model shaped
like a cylinder with two cones attached at its   two ends by using a
drawing 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 the model that
made by Shreya.

2.3) we have to 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 corner has a height of 2cm. Find the volume of the model.

3.1) A pole consists of a cylinder with height 220cm and base diameter 24cm which is surmounted by another cylinder of height 60cm and radius 8cm. Find the mass of the pole given that 1 cm^3 of iron has approximately 8g mass.

3.2) A solid iron pole consists of a cylinder of height 2.2m and base diameter 0.24m which is surmounted by another cylinder of height 0.6cm radius 8 cm. Find the mass of the pole given that 1cm^3 of iron has approximately 8g mass. (π =3.14)

3.3) A solid iron pole consists of a cylinder of height 220cm and base radius 12cm which is surmounted by another cylinder of height 60cm and perimeter of base perimeter of base 16 π.

3.4) A solid pole consists of a cylinder of height 220cm and base diameter 24cm is surmounted by another cylinder of height 60cm and radius 8cm. Find the mass of the pole given that iron has approximately 8g/cm^3 .

4.1) A pen stand made of wood is in the shape of a cuboid with four corner conical depressions to hold pens. The dimensions of the cuboid are 15cm by 10 cm by 3.5cm. The radius of each of the depressions is 0.5cm and depth is 1.4 cm, find the volume of wood in the entire stand.

4.2) A pen stand made of wood is in the shape of a cuboid with four corner conical depressions to hold pens. The lenghth, breadth and height of the cuboid are 15cm X10 cm X 3.5 cm . The radius of each of the depressions is 0.5 cm and depth is 1.4 cm, find the volume of wood in the entire stand.

4.3) A pen stand made of wood is in the shape of a cuboid with four corner conical depressions to hold pens. The dimensions of the cuboid are 15cm by 10 cm by 3.5 cm. Find the volume of wood in the entire stand if the radius of each of the depressions is 0.5 cm and height is 1.4cm.

5.1) A copper rod of diameter 1cm and length 8cm is drawn into a wire of length 18m of uniform thickness. Find the thickness of the wire.

5.2) A copper rod of radius 2cm and height 8cm is drawn into a wire of length 18m of uniform thickness. Find the thickness of the wire.

5.3) A copper rod of diameter 1cm and length 8cm is drawn into a wire of length 18m of uniform thickness. Find the diameter of the wire.

5.4) A cylinder shaped rod of diameter 1cm and length 8cm is drawn into a wire of length 18m of uniform thickness. Find the perimeter of the wire.

6.1) A metallic sphere of radius 4.2cm is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.

6.2) A metallic sphere of diameter 8.4cm is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.

6.3) A metallic cylinder of radius 6cm and height 2.74cm is melted and recast into the shape of a metallic sphere. Find the height of the sphere.

6.4) A metallic cylinder of radius 6cm and height 2.74cm is melted and recast into the shape of a metallic sphere. Find the radius of the sphere.

7.1) A metallic spheres of radii 6cm, 8cm and 10cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.

7.2) A metallic spheres of radii 6cm, 8cm and 10cm respectively, are melted to form a single solid sphere. Find the height (diameter) of the resulting sphere.

7.3) Iron balls of radii 6cm, 8cm and 10cm respectively, are melted to form a single solid ball. Find the radius of the resulting ball.

8.1) A 20m deep well with diameter 7m is dug and the earth from the digging is evenly spread out to form a platform 22m by 14m. Find the height of the platform.

8.2) A 20m height well with radius 3.5m is dug and the earth from the digging is evenly spread out to form a platform 22m X14m. Find the height of the platform.

9.1) A well of diameter 3m is dug 14m deep the earth taken out of it. It has been spread evenly all around it in the shape of a circular ring of width 4m to form an embankment. Find the height of the embakment.

9.2) A well of radius 1.5m is dug 14m deep the earth taken out of it. It has been spread evenly all around it in the shape of a circular ring of width 4m to form an embankment. Find the height of the embakment.

10.1) A container shaped like a right circular cylinder having diameter 12cm and height 15cm is full of ice cream. The ice cream is to be filled in to cones of height 12cm and diameter 6cm having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.

10.2) A container shaped like a right circular cylinder having radius 12cm and height 15cm is full of ice cream. The ice cream is to be filled in to cones of height 12cm and diameter 6cm having a

hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.

10.3) A container shaped like a right circular cylinder is full of ice cream of volume 540cm³. The ice cream is to be filled in to cones of height 12cm and diameter 6 cm having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.

11.1) How many silver coins 1.75cm in diameter and of thickness 2mm must be melted to form a cuboid of dimensions 5.5cmX10cmX 3.5cm.

11.2) How many silver coins 1.75cm in diameter and of thickness 2mm must be melted to form a cuboid of base dimensions 5.5cm X10cm and height 3.5cm.

12.1) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 10cm and its base is of radius 3.5cm. Find the total surface area of the article. .

12.2) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 10cm and its base area is 38.5cm². Find the total surface area of the article.

13.1) The slant height of a frustum of a cone is 15cm and the perimeters (circumference) of its circular ends are 62.83cm and 25.13cm. Find the curved surface area of the frustum.

13.2) A fez, the cap used by the Turks, is shaped like the frustum of a cone. If its radius on the open side is 10cm, radius at the upper base is 4cm and its slant height is 15cm, find the area of material used for making it.

14.1) A metallic right circular cone 20cm high and whose vertical angle is 60° is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter 1/10 cm, find the length of the wire.

14.2) A copper wire, 1mm in diameter, is wound about a cylinder whose length is 10cm, and diameter 20cm, so as to cover the curved surface of the cylinder. Find the length of copper.

15.1) A drinking glass is in the shape of a frustum of a cone of height 16cm. The diameters of its two circular ends are 4cm and 2cm. Find the capacity of the glass.

15.2) A container, opened from the top and made up of a metal sheet, is in the form of a frustum of a cone of height 16cm with radii of its lower and upper ends as 1cm and 2cm, respectively. Find the cost of the milk which can completely fill the container, at the rate of Rs.20/- per litre.