SURFACE AREA AND VOLUME

1 MARK QUESTION

1) Surface area of a sphere of radius 'r' unit is

(A)
$$\pi r^2$$
 sq.units (B) $2\pi r^2$ sq.units
(C) $3\pi r^2$ sq.units (D) $4\pi r^2$ sq.units.

2) In the given figure, the volume of the frustum of a cone is



(A)
$$\pi (\mathbf{r}_1 + \mathbf{r}_2) l$$
 (B) $\pi (\mathbf{r}_1 - \mathbf{r}_2) l$
(C) $\frac{1}{3} \pi h (r_1^2 + r_2^2 - r_1 r_2)$ (D) $\frac{1}{3} \pi h (r_1^2 + r_2^2 + r_1 r_2)$

3) Volume of a sphere of radius 'r' unit is

(A) $\frac{2}{3}\pi r^2$ cubicunits (B) $\frac{2}{3}\pi r^3$ cubicunits(C) $\frac{4}{3}\pi r^3$ cubicunits (D) $\frac{4}{3}\pi r^2$ cubicunits.

4) A cylinder made of wax is melted and recast completely into

e. Then the volume of the sphere is

- (A) two times the volume of the cylinder
- (B) halfthevolumeofthecylinder
- (C) 3timesthevolumeofthecylinder
- (D) equaltothevolumeofthecylinder

5) The surface area of a sphere is 616 sq.cm. Then the radius of the same sphere is

(A)	9cm	(B)	14cm
(C)	21cm	(D)	7cm

6) The formula to find the total surface area of a right circular based cylindrical vessel of base radius r cm and height h cm opened at one end is

(A)
$$(\pi r^2 + 2\pi rh) \text{cm}^2$$
 (B) $2\pi rh \text{cm}^2$
(C) $\frac{1}{3} \pi r^2 h \text{ cm}^3$ (D) $\pi r^2 + h \text{ cm}^2$

7) To find the curved surface area of a frustum of a cone as shown in the figure the formula used is



(C)
$$\pi l(r_1 + r_2)$$
 (D) $\pi l(r_1 - r_2)$

8) The total surface area of solid hemisphere is 462 cm 2. If the curved surface area of it is 308 cm 2, then the area of the base of the hemisphere is

(A)	308cm ²	(B) 231cm^2
(C)	154cm ²	(D) 1078cm ²

9) The volume of a cone as shown in the figure is



10) The surface area of a sphere of radius 7 cm is

(A) 154cm² (B) 616cm³

(C) $616cm^2$ (D) $308cm^2$.

11)If the area of the circular base of a cylinder is 22 cm^2 and its height is 10 cm, then the volume of the cylinder is

(A)
$$2200 \text{ cm}^2$$
 (B) 2200 cm^3
(C) 220 cm^3 (D) 220 cm^2

12)A cone is cut by a plane parallel to its base and the small cone that

obtained is removed then the remaining part of the cone is

(A) a frustum of cone(B) a frustum of cylinder(C) a Sphere(D) a right circular cone

13) The formula used to find the curved sarface area of a cone of radius(r) , height (h) and slant height (1) is

(A) CSA =
$$\pi rl$$
 (B) CSA = $2\pi (r + l)$
(C) CSA = $2\pi r(r + h)$ (D) CSA = $\frac{\pi r^2 h}{3}$

14) Formula used to find the surface area of a sphere whose radius 'r' units is

(A) πr^2 (B) $2\pi r^2$ (C) $3\pi r^2$ (D) $4\pi r^2$

15) The surface area of a sphere of radius 7 cm is

(A)	88cm ²	(B) 616 cm ²
(C)	661cm ²	(D) 308cm ²

16) In the given figure, write the formula used to find the curved surface area of the cone.



- 17) Write the formula to find the volume (V) of the frustum of a cone of height *h* and radii of two circular ends r_1 and r_2 .
- 18) Write the formula to find the total surface area of a right-circular cone whose circular base radius is 'r' and slant height is 'l'.
- **19**) Write the formula to find the volume of a cone.
- 20) Find the surface area of a sphere of radius 7cm
- 21) Write the formula to calculate the curved surface area of the frustum of a cone.
- 22) A solid piece of iron is in the form of a cuboid of dimensions 10 cm ×
 5 cm × 2 cm . Find its volume .
- 23) Write the formula to find the volume of the sphere .
- 24) Write the formula used to find the total surface area of a right circular cylinder.

2 MARK QUESTION

- 25) A metallic sphere of radius 9 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.
- 26) The faces of two cubes of volume 64 cm 3 each are joined together to form a cuboid. Find the total surface area of the cuboid.
- 27) The radii of two circular ends of a frustum of a cone shaped dustbin are15 cm and 8 cm. If its depth is 63 cm, find the volume of the dustbin.
- 28) Curved surface area of the right circular cylinder is 440 cm3 and the radius of its circular base is 7 cm . Find the volume of the cylinder .

3 MARK QUESTION

- 29) The volume of a solid right circular cylinder is 2156 cm 3. If the height of the cylinder is 14 cm, then find its curved surface area (Take $\pi = \frac{22}{7}$)
- **30)** The slant height of a frustum of a cone is 4cm and the perimeters of its circular ends are 18cm and 16cm, then find the curved surface area of the frustum of the cone.
- 31) A Toy is in the form of a hemisphere surmounted on a cylinder of height 10cm as shown in the figure. If the radius of the cylinder is 3.5cm find the volume of the toy.



32) A cone is having its base radius 12 cm and height 20 cm. If the top of this cone is cut in to form of a small cone of base radius 3 cm is removed, then the remaining part of the solid cone becomes a frustum. Calculate the volume of the frustum.



- 33) A milk tank is in the shape of a cylinder with hemispheres of same radii attached to both ends of it as shown in figure. If the total height of the tank is 6 m and the radius is 1 m, calculate the maximum quantity of milk filled in the tank in litres. $(\pi = \frac{22}{7})$
- 34) A flower vase is in the form of a frustrum of a cone . The perimeters of its bases are 44cm and 8.4 π cm. If the depth is 14 cm , then find how much soil it can hold.



35) A toy is in the form of a cone mounted on a hemisphere both are of same radius . The diameter of the conical portion is 6 cm and its height is 4 cm . Determine the surface area of the solid . (Take $\pi = 3.14$)



36) A solid is in the form of a cone mounted on a right circular cylinder, both having same radii as shown in the figure. The radius of the base and height of the cone are 7 cm and 9 cm respectively. If the total height of the solid is 30 cm, find the volume of the solid.

37) The slant height of the frustum of a cone is 4 cm and the perimeter of its circular bases are 18 cm and 6 cm respectively. Find the curved surface area of the frustum.



4 MARK QUESTION

38) Sand is filled in a cylindrical vessel of height 32 cm and radius of its base is 18 cm. This sand is completely poured on the level ground to form a conical shaped heap of sand. If the height of the conical heap is 24 cm. Find the base radius and slant height of the conical heap.

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



40) A right circular cone of height 30 cm is cut and removed by a plane parallel to its base from the vertex. If the volume of smaller cone obtained is $\frac{1}{27}$ of the volume of the given cone, calculate the height of the remaining part of the cone.

41) A toy is in the form of a cone of radius 21 cm, mounted on a hemisphere of same radius, as shown in the figure. The total height of the toy is 49 cm. Find the surface area of the toy.



- 42) A container opened from the top is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends are 8 cm and 20 cm respectively. Find the cost of the milk which can completely fill the container at the rate of Rs. 20 per litre. (Take $\pi = 3.14$)
- 43) The bottom of a right cylindrical shaped vessel made from metallic sheet is closed by a cone shaped vessel as shown in the figure. The radius of the circular base of the cylinder and radius of the circular base of the cone are each is equal to 7 cm. If the height of the cylinder is 20 cm and height of cone is 3 cm, calculate the cost of milk to fill completely this vessel at the rate of Rs. 20 per litre.



- 44) A hemispherical vessel of radius 14 cm is fully filled with sand. This sand is poured on a level ground. The heap of sand forms a cone shape of height 7 cm. Calculate the area of ground occupied by the circular base of the heap of the sand.
- 45) A solid is in the shape of a cylinder with a cone attached at one end and a hemisphere attached to the other end as shown in the figure. All of them are of the same radius 7 cm. If the total length of the solid is 61

cm and height of the cylinder is 30 cm, calculate the cost of painting



the outer surface of the solid at the rate of Rs. 10 per 100 cm 2 .

46) A solid metallic cylinder of diameter 12 cm and height 15 cm is melted and recast into toys in the shape of right circular cone mounted on a hemisphere as shown in the figure. If radii of the cone and hemisphere are each equal to 3 cm and the height of the toy is 7 cm, calculate the number of such toys that can be formed.



47) A cone of radius 10 cm is cut into two parts by a plane through the midpoint of its vertical axis parallel to the base . Find the ratio of the volumes of the smaller cone and frustum of the cone .

