# JAIPUR EDUCATION PLUS 

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1. A solid iron rectangular block of dimensions $4.4 \mathrm{~m}, 2.6 \mathrm{~m}$, and 1 m is cast into a hollow cylindrical pipe of internal radius 30 cm and thickness 5 cm . Find the length of the pipe. (Use $\Pi=22 / 7$ ) (Ans $=112 \mathrm{~m}$ )
2. A well with inside diameter 7 m , has been dug 22.5 m deep and the earth dug our is used to form an embankment around it. If the height of the embankment is 1.5 m , find the width of the embankment. (Ans $=10.5 \mathrm{~m}$ )
3. Water is flowing at the rate of $7 \mathrm{~m} / \mathrm{sec}$ through a circular pipe whose internal diameter is 2 cm , into a cylindrical tank of radius 40 cm . Find the increase in water level in $1 / 2$ hour. (Ans $=7.875 \mathrm{~m}$ )
4. Water is flowing at $5 \mathrm{~km} / \mathrm{hr}$ through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44 m wide. Find the time in which the water level in the tank rises by 7 cm . (Ans $=2$ hours)
5. Water flows @ $10 \mathrm{~m} / \mathrm{min}$ through a cylindrical pipe having its diameter as 5 mm . How much time will it take to fill a conical vessel whose diameter of base is 40 cm and depth 24 cm ? (Ans $=51 \mathrm{~min} 12 \mathrm{sec}$ )
6. The radii of the internal and external surfaces of a metallic spherical shell are 3 cm and 5 cm respectively. It is melted and recast into a solid right circular cylinder of height $32 / 3 \mathrm{~cm}$. Find the diameter of the base of the cylinder.
(Ans $=7 \mathrm{~cm}$ )
7. The radius of a solid iron sphere is 8 cm .8 rings of iron plate of external radius $20 / 3 \mathrm{~cm}$ and the thickness 3 cm are made by melting this sphere. Find the internal diameter of each ring. (Ans = 8 cm )
8. A tent of height 77dm is in the form of a right circular cylinder of diameter 36 m and height 44 dm surmounted by a right circular cone. Find the cost of canvas at Rs 3.50/m2 (Ans = Rs. 5365.80)
9. A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere. If the radius of hemisphere is 4.2 cm and the total height of the toy is 10.2 cm , find the volume of the wooden toy. (Ans $=266.11 \mathrm{~cm} 3$ )
10. A cylindrical container of radius $6 \mathrm{~cm} \&$ height 15 cm is filled with ice-cream. The whole ice cream has to be distributed to 10 children in equal cones with hemispherical tops. If the height of the conical portion is 4 times the radius of its base, find the radius of the cone. (Ans $=3 \mathrm{~cm}$ )
11. A solid is composed of a cylinder with hemispherical ends. If whole length of the solid is 98 cm and diameter of cylinder is 8 cm , find the total surface area $\&$ volume of the given solid.
$($ Ans $=8624 \mathrm{~cm} 2,54618.67 \mathrm{~cm} 3)$
12. A right triangle whose sides are 15 cm and 20 cm , is made to revolve about its hypotenuse. Find the volume and total surface area of the double cone so formed. (Use $\Pi=3.14$ ).
(Ans $3768 \mathrm{~cm} 3,318.8 \mathrm{~cm} 2$ )
13. A cylindrical road roller made of iron is 1 m long. Its internal diameter is 54 cm and the thickness of iron sheet used in making the roller is 9 cm . find the mass of the roller, if 1 cm 3 of iron has 8 gm mass. (Ans $=1425.6 \mathrm{~kg}$ ) 14. The difference between outside and inside surface areas of a metallic cylindrical

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pipe 14 cm long is 44 cm 2 if the pipe is made of 99 cm 3 of metal, find the outer and inner radii of the pipe. (Ans $=2.5 \mathrm{~cm}, 2 \mathrm{~cm}$ )
15. A bucket is in the form of a frustum of a cone and holds 28.49 litres of water. The radii of the top and bottom are $28 \mathrm{~cm}, 21 \mathrm{~cm}$ respectively. Find the height of the bucket. (Ans $=15 \mathrm{~cm}$ )
16. The perimeters of ends of a frustum are $48 \mathrm{~cm} \& 36 \mathrm{~cm}$, if height of frustum be 11 cm , find its
volume. $\quad($ Ans $=1554 \mathrm{~cm} 3)$
17. The height of a cone is 30 cm . A small cone is cut off at the top by a plane parallel to the base.If its volume be $1 / 27$ of the volume of the given cone, at what height above the base is the section made? (Ans = 20cm)
18. A tent is made in form of a conic frustum surmounted by a cone. The diameters of base and top of frustum are $20 \mathrm{~m} \& 6 \mathrm{~m}$ respectively and height is 24 m . If height of the tent is 28 m , find the area of the canvas cloth required. $(\mathrm{Ans}=340 \Pi \mathrm{~m} 2)$
19. A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the curved surface area of the remainder is $8 / 9$ of the curved surface of the whole cone, find the ratio of the line segments into which the cone's altitude is divided by the plane (Ans=1:2)
20.A cylinder and a cone have equal bases and equal heights. If their curved surfaces are in the ratio $8: 5$, determine the ratio of the radius of the base to the height of either of them (Ans =3:4)
21.Lead spheres of diameter 6 cm are dropped into a cylindrical beaker containing some water and are completely submerged. If the diameter is 18 cm and the water rises by 40 cm , find the number of lead spheres dropped in the water. $\quad$ (Ans = 90)
22. A circus tent is cylindrical to a height of 3 m and conical above it. If its diameter is 105 m and the slant height of the conical portion is 53 m , calculate the length of the canvas cloth 5 m wide required to make the tent. $($ Ans $=1947 \mathrm{~m})$
23. A cone, a hemi-sphere and a cylinder stand on equal bases and have the same height. Find the ratio of their volumes as well the ratio of their total surface areas (Ans =1:2:3, (V2 +1$): 3: 4$ )
24. A cone of radius 10 cm is divided into two parts by drawing a plane through the mid-point of its axis parallel to its base. Find the ratio of the volumes of the two parts of the cone (Ans = 1:7)
25. A building is in the shape of a cylinder surmounted by a hemi-spherical vaulted dome. The internal diameter of the building is equal to the total height of the building. If the volume of air space inside the building is $880 / 21 \mathrm{~m} 3$, find the height of the crown of the vault above the floor. (Ans $=4 \mathrm{~m}$ )
26. An inverted cone of vertical height 12 cm and radius of the base 9 cm has water to a depth of 4 cm . Find the area of the internal surface of the cone not in contact with water. (Ans = 376.8cm2)
27. The mass of a spherical iron shot-put 12 cm in diameter is 5 kg . Find the mass of a hollow cylindrical pipe 12 cm long (made of the same metal), if it's internal and external diameters are 20 cm and 22 cm , respectively.

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(\mathrm{Ans}=4.375 \mathrm{~kg})
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