

- 1) A toy is in the shape of a solid cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 21 cm and 40 cm. and the height of cone is 15 cm. find the TSA of the toy. ($\pi = 3.14$) 5463.6 cm²
Ans
- 2) Three metallic solid cubes whose edges are 3 cm, 4 cm and 5 cm are melted and formed into a single cube. find the edge of the cube so formed. 6 cm
- 3) A right circular cylinder and a cone have equal bases and equal heights. If their CSA are in the ratio 8:5, show that the ratio b/w radius of their bases to their heights is 3:4.
- 4) A milk container of height 16 cm is made of metal sheet in the form of a frustum of cone with radii of its lower and upper ends as 8 cm and 20 cm. find the cost of milk @ ₹ 22 per litre which the container can hold. ₹ 230.12
- 5) From a solid cylinder of height 2.8 cm and diam. 4.2 cm, a conical cavity of the same height and same diam. is hollowed out. find the total S.A of the remaining solid. 7392 cm²
- 6) A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the CSA of the remainder is $\frac{8}{9}$ of the CSA of whole ~~cylinder~~ cone, find the ratio of the line segment into which the cone's altitude is divided by the plane. 1:2 Ans.
- 7) A bucket is in the form of a frustum of cone whose radii of bottom and top are 7 cm and 28 cm. If the capacity of the bucket is 21560 cm³. Find TSA of the bucket. $h = 20$ cm, $l = 29$ cm TSA = 3344 cm²

8) If $\sec \theta + \tan \theta = p$, prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$

9) If $m = \tan \theta + \sin \theta$; $n = \tan \theta - \sin \theta$; prove that $m^2 - n^2 = 4\sqrt{mn}$.

10) The angle of elevation of the top of the building from the foot of the tower is 30° and the angle of the top of the tower from the foot of the building is 60° . If the tower is 50m high, find the height of the building

11) If the angle of elevation of a cloud from a point h , metres above a lake is α and the angle of depression of its reflection in the lake is β , prove that the distance of the cloud from the point of observation is $\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$.

12) An aeroplane is flying at a height of 210m. flying at this height at some instant the angle of depression of 2 points in a line in opposite directions on both banks of the river are 45° and 60° . find the width of the river. ($\sqrt{3} = 1.73$)

13) The height of a tower is 10m. what is the length of its shadow when sun's altitude is 45° .

14) The length of the shadow of a tower standing on level plane is found to be 2m metres longer when the sun's altitude is 30° than when it was 45° . Prove that the height of the tower is $2(\sqrt{3} + 1)$ units

15) A vertical tower stands on a horizontal plane and is surmounted by a vertical flagstaff of height 5m. At a point on the plane, the angles of elevations of the the bottom and the top of the flagstaff are 30° and 60° respectively. find the height of the tower