Surface Area and Volume exercise 3

Question 1)
Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area.

Question 2)
Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m?

Question 3)
Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find radius of the base And total surface area of the cone.

Question 4)
A conical tent is 10 m high and the radius of its base is 24 m. Find
(i) Slant height of the tent
(ii) Cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs 70.

Question 5)
What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm. [Use $\pi = 3.14$]

Question 6)
The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs 210 per 100 m^2.

Question 7)
A joker's cap is in the form of right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

Question 8)
A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height 1 m. If the outer side of each of the cones is to be painted and the cost of painting is Rs 12 per m2, what will be the cost of painting all these cones? (Use $\pi = 3.14$ and take $\sqrt{1.04} = 1.02$)..

We are assuming the value of π=22/7 in all the solutions

Solution 1:
Diameter of the base of a cone =d=10.5 cm
Radius of the base of a cone =r=5.25 cm
Slant height of the cone =*l*=10 cm
Curved Surface Area of the cone =π.r.*l*= (22/7)×5.25×10=165 cm^2

Solution 2
Radius (r) of the base of cone = 12 m
Slant height (l) of cone = 21 m
Total surface area of cone = πr(r + l) =1244.57 m^{2-}

Solution 3:
CSA =308 cm^2
Slant height =14cm
Radius of the cone =?

Now CSA =πrl
308=(22/7)X14Xr
R=7 cm

Total surface area
=πrl+πr^2
=462 cm^2

Solution 4
Height of the conical tent =h=10 m
Radius of the base of conical tent =r=24 m
Slant height of the conical tent = *l* = $\sqrt{h^2 + r^2} = 26\ m$
Curved Surface Area of the tent =π.r.l=(22/7)×24×26 m^2

Cost of canvas to make the tent @Rs 70 per 1 m^2
=70×(22/7)×24×26= Rs 137280

Solution 6:
Slant height (l) of conical tomb = 25 m
Base radius (r) of tomb = 7 m
CSA of conical tomb = πrl

= 550 m^2
Cost of white-washing 100 m^2 area = Rs 210
Cost of white-washing 550 m^{2-} area =Rs (210/100) X550
= Rs 1155
Therefore, it will cost Rs 1155 while white-washing such a conical tomb.

Solution 7:
Base radius of conical cap =r=7 cm
Height of conical cap =h=24 cm

Slant height of conical cap = *l* = *l* = $\sqrt{h^2 + r^2} = 25\ cm$

Curved Surface area of 1 cap = Area of the sheet required to make 1 cap =π.r.*l*

=(22/7)×7×25=550 cm^2

Solution 8:
Radius of the cone =r=40/2 cm=.2 m
Height of the cone =h=1 m
Slant height of cone = *l* = *l* = $\sqrt{h^2 + r^2} = 1.02\ m$

Curved surface of cone=πrl=.64056 m^2

Curved surface area of 50cone=50X .64056 m^2

Now cost of painting 1m^2 =R12
Then cost of painting 50 cone will be =
=12X50X .64056
=Rs 384.556