## EDUCATION DEPARTMENT, VILLUPURAM DISTRICT.

## UNIT TEST

UNIT 7 - Mensuration
Marks: 50
Time: 1112 hrs .

I Choose the correct answer.

1. If two solid hemispheres of same base radius $r$ units are joined together along their bases, then curved surface area of this new solid is
a) $4 \pi r^{2}$ sq. units
b) $6 \pi r^{2}$ sq. units
c) $3 \pi r^{2}$ sq. units
d) $8 \pi r^{2}$ sq. units
2. The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be
a) 12 cm
b) 10 cm
c) 13 cm
d) 5 cm
3. If the radius of the base of a cone is tripled and the height is doubled then the volume is
a) made 6 times
b) made 18 times
c) made 12 times
d) unchanged
4. The total surface area of a hemi-sphere is how much times the square of its radius.
a) $\pi$
b) $4 \pi$
c) $3 \pi$
d) $2 \pi$
5. A frustum of a right circular cone is of height 16 cm with radii of its ends as 8 cm and 20 cm . Then, the volume of the frustum is
a) $3328 \pi \mathrm{~cm}^{3}$
b) $3228 \pi \mathrm{~cm}^{3}$
c) $3240 \pi \mathrm{~cm}^{3}$
d) $3340 \pi \mathrm{~cm}^{3}$
6. A spherical ball of radius $r_{1}$ units is melted to make 8 new identical balls each of radius $r^{2}$ units. Then $r_{1}: r_{2}$ is
a) $2: 1$
b) $1: 2$
c) $4: 1$
d) $1: 4$
7. The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is
a) $1: 2: 3$
b) $2: 1: 3$
c) $1: 3: 2$
d) $3: 1: 2$

II Answer the following questions. (any 5)
$5 \times 2=10$

1. The curved surface area of a right circular cylinder of height 14 cm is $88 \mathrm{~cm}^{2}$. Find the diameter of the cylinder.
2. If the total surface area of a cone of radius 7 cm is $704 \mathrm{~cm}^{2}$, then find its slant height.
3. If the base area of a hemispherical solid is 1386 sq. metres, then find its total surface area?
4. If the ratio of radii of two spheres is $4: 7$, find the ratio of their volumes.
5. A cone of height 24 cm is made up of modeling clay. A child reshapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.
6. An aluminium sphere of radius 12 cm is melted to make a cylinder of radius 8 cm . Find the height of the cylinder.
7. The slant height of a frustum of a cone is 5 cm and the radii of its ends are 4 cm and 1 cm . Find its curved surface area.

III Answer the following questions. (any 5)

1. An industrial metallic bucket is in the shape of the frustum of a right circular cone whose top and bottom diameters are 10 m and 4 m and whose height is 4 m . Find the curved and total surface area of the bucket.
2. From a solid cylinder whose height is 2.4 cm and the diameter 1.4 cm , a cone of the same height and same diameter is carved out. Find the volume of the remaining solid to the nearest $\mathrm{cm}^{3}$.
3. As shown in figure a cubical block of side 7 cm is surmounted by a hemisphere.
Find the surface area of the solid.

4. A right circular cylindrical container of base radius 6 cm and height 15 cm is full of ice cream. The ice cream is to be filled in cones of height 9 cm and base radius 3 cm , having a hemispherical cap. Find the number of cones needed to empty the container.
5. A toy is in the shape of a cylinder surmounted by a hemisphere. The height of the toy is 25 cm . Find the total surface area of the toy if its common diameter is 12 cm .
6. A solid right circular cone of diameter 14 cm and height 8 cm is melted to form a hollow sphere. If the external diameter of the sphere is 10 cm , find the internal diameter.
7. As observed from the top of a 60 m high lighthouse from the sea level, the angles of depression of two ships are $28^{\circ}$ and $45^{\circ}$. If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. $\left(\tan 28^{\circ}=0.5317\right)$

IV Answer the following question.

1. a) Nishanth is the winner in a Marathon race of 12 km distance. He ran at the uniform speed of $12 \mathrm{~km} / \mathrm{hr}$ and reached the destination in 1 hour. He was followed by Aradhana, Ponmozhi, Jeyanth, Sathya and Swetha with their respective speed of $6 \mathrm{~km} / \mathrm{hr}, 4 \mathrm{~km} / \mathrm{hr}, 3 \mathrm{~km} / \mathrm{hr}$ and $2 \mathrm{~km} / \mathrm{hr}$. And, they covered the distance in $2 \mathrm{hrs}, 3 \mathrm{hrs}, 4 \mathrm{hrs}$ and 6 hours respectively. Draw the speed-time graph and use it to find the time taken to Kaushik with his speed of $2.4 \mathrm{~km} / \mathrm{hr}$.
(OR)
b) Draw the graph of $y=2 x^{2}-3 x-5$ and hence solve $2 x^{2}-4 x-6=0$
