RK TUITION CENTRE - KUMBAKONAM

10TH MATHEMATICS
MENSURATION

20 X 1 = 20

1. The curved surface area of a right circular cone of height $15cm$ and base diameter $16cm$ is
   (a) $60\pi cm^2$ (b) $68\pi cm^2$ (c) $120\pi cm^2$ (d) $136\pi cm^2$
2. 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) $8\pi r^2 sq.units$
3. The height of a right circular one whose radius is $5cm$ and slant height is $13cm$ will be
   (a) $12cm$ (b) $10cm$ (c) $13cm$ (d) $5cm$
4. If the radius of the base of a right circular cylinder is halved keeping the same height, then the ratio of the volume of the cylinder thus obtained to the volume of original cylinder is
   (a) $1:2$ (b) $1:4$ (c) $1:6$ (d) $1:8$
5. The total surface area of a cylinder whose radius is $\frac{1}{3}$ of its height is
   (a) $\frac{9\pi h^2}{8}$sq.units (b) $24\pi h^2$sq.units (c) $\frac{8\pi h^2}{9}$sq.units (d) $\frac{56\pi h^2}{9}$sq.units
6. In a hollow cylinder, the sum of the external and internal radii is $14cm$ and the width is $4cm$. If its height is $20cm$, the volume of the material in it is
   (a) $5600\pi\ cm^3$ (b) $11200\pi\ cm^3$ (c) $56\pi\ cm^3$ (d) $3600\pi\ cm^3$
7. If the radius of the base of a cone is tripled and the height is double then the volume is
   (a) Made 6 times (b) made 18 times (c) made 12 times (d) unchanged
8. The total surface area of a hemi-sphere is how much times the square of its radius.
   (a) π (b) 4π (c) 3π (d) 2π
9. A solid sphere of radius x cm is melted and cast into a shape of a solid cone of same radius. The height of the cone is
   (a) $3xcm$ (b) xcm (c) $4xcm$ (d) $2xcm$
10. A frustum of a right circular cone is height $16cm$ with radii of its ends an $8cm$ and $20cm$. Then the volume of the frustum is
    (a) $3328\pi cm^3$ (b) $3228\pi cm^3$ (c) $3240\pi cm^3$ (d)$3340\pi cm^3$
11. A shuttle cock used for playing badminton has the shape of the combination of
    (a) A cylinder and a sphere (b) a hemisphere and a cone
    (c) A sphere and a cone (d) frustum of a cone and a hemisphere
12. A spherical ball of radius r_1 units is melted t 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) $1:4$
13. The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius $1cm$ and height 5cm is
    (a) $\frac{4}{3}\pi$ (b) $\frac{10}{3}\pi$ (c) 5π (d) $\frac{20}{3}\pi$
14. The height and radius of the cone of which the frustum is a part are h_1 units and r_1 units respectively. Height of the frustum is h_2 units and radius of the smaller base if r_2 units. If $h_2 : h_1 = 1:2$ then $r_2 : r_1$ is
    (a) $1:3$ (b) $1:2$ (c) $2:1$ (d) $3:1$

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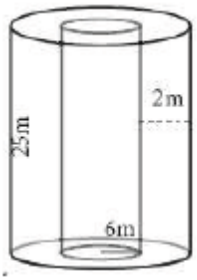
15. The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is
    (a) $1:2:3$ (b) $2:1:3$ (c) $1:3:2$ (d) 3:1:2
16. The ratio of base of a one $5cm$ and to height $12cm$. The slant height of the cone.
    (a) $12cm$ (b) $17cm$ (c) $7cm$ (d) $60cm$
17. A cylinder 10 cone and have there are of an equal base and have the same height. What is the ratio of these volumes?
    (a) $3:1:2$ (b) $3:2:1$ (c) $1:2:3$ (d) $1:3:2$
18. The ratio of the volumes of two spheres is $8:27$. If r and R are the radii of sphere respectively, then $(R-r):r$ is
    (a) $1:2$ (b) $1:3$ (c) $2:3$ (d) $4:9$
19. A spherical steel bar is melted to make 8 new identical balls then the radius each new ball is how much times the radius of the original ball?
    (a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) $\frac{1}{8}$
20. A semi-circular thin sheet of a metal of diameter $28cm$ is bentt and an open conical cup is mader. What is the capacity of the cup?
    (a) $\left[\frac{1000}{3}\right]\sqrt{3}cm^3$ (b) $300\sqrt{3}cm^3$ (c) $\left[\frac{700}{3}\right]\sqrt{3}cm^2$ (d) $\left[\frac{1078}{3}\right]\sqrt{3}cm^3$

26 X 2 = 52

21. A cylindrical drum has a height of 20 cm and base radius of $14cm$. Find its curved surface area and the total surface area.
22. The curved surface area of a right circular cylinder of height $14cm$ is $88cm^2$. Find the diameter of the cylinder.
23. A garden roller whose length is $3m$ long and whose diameter is $2.8m$ is rolled to level a garden. How much area will it cover in 8 revolutions?
24. If one litre of paint covers $10m^2$, how many litres of paint is required to paint the internal and external surface areas of a cylindrical tunnel whose thickness is $2m$, internal radius is $6m$ and height is $25m$.



25. The radius of a conical tent is $7m$ and the height is $24m$. Calculate the length of the canvas used to make the tent if the width of the rectangular canvas is $4m$?
26. If the total surface area of a cone of radius $7cm$ is $704cm^2$, then find its slant height.
27. Find the diameter of a sphere whose surface area is $154m^2$.
28. The radius of a spherical balloon increases from $12cm$ to $16cm$ as air being pumped into it. Find the ratio of the surface area of the balloons in the two cases.
29. If the base area of a hemispherical solid is $1386sq$. metres, then find its total surface area?

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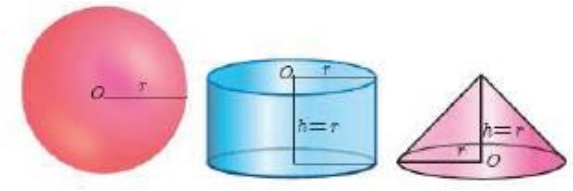
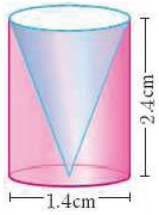
30. A sphere, a cylinder and a cone are of the same radius, where as cone and cylinder are of same height. Find the ratio of their curved surface areas.



31. The slant height of a frustum of a cone is $5cm$ and the radii of its ends are $4cm$ and $1cm$. Find its curved surface area.
32. The external radius and the length of a hollow wooden log are $16cm$ and $13cm$ respectively. If its thickness is $4cm$ then find its T.S.A.
33. A persons live in a conical tent whose slant height is $19cm$. If each person require$22cm^2$ of the floor area, then find the height of the tent.
34. The ratio of the radii of two right circular cones of same height is $1:3$. Find the ratio of their curved surface area when the height of each cone is 3 times the radius of the smaller cone.
35. The radius of a sphere increases by 25%. Find the percentage increase in its surface area.
36. Find the volume of a cylinder whose height is $2m$ and whose base area is $250m^2$.
37. The volume of a solid right circular cone is $11088cm^3$. If its height is $24cm$ then find the radius of the cone.
38. The ratio of the volumes of two cones is $2:3$. Find the ratio of their radii if the height of second cone is doubled the height of the first.
39. A $14m$ deep well with inner diameter $10m$ is dug and the earth taken out is evenly spread all around the well to form an embankment of width$5m$. Find the height of the embankment.
40. If the circumference of a conical wooden piece is $484cm$then find its volume when its height is $105cm$.
41. If the ratio of radii of two spheres is $4:7$, find the ratio of their volumes.
42. Water is flowing at the rate of $15km$ per hour through a pipe of diameter $14cm$ into a rectangular tank which is $50m$ long and $44m$ wide. Find the time in which the level of water in the tanks will rise by $21cm$.
43. A conical flask is full of water. The flask has base radius r units and height h units, the water poured into a cylindrical flask of base radius xr units. Find the height of water in the cylindrical flask.
44. The barrel of a fountain-pen cylindrical in shape, is $7cm$ long and $5mm$ in diameter. A full barrel of ink in the pen will be used for writing 330 words on an average. How many words can be written using a bottle of ink containing on fifth of a litre?
45. A hemi-spherical tank of radius 1.75m is full of water. It is connected with a pipe which empties the tank at the rate of 7 litre per second. How much time will it take to empty the tank completely?
46. Find the maximum volume of a cone that can be carved out of solid hemisphere of radius r units.

20 X 5 = 100

47. From a solid cylinder whose height is $2.4cm$ and diameter $1.4cm$, a conical cavity of the same height and base is hollowed out. Find the total surface area of the remaining solid.



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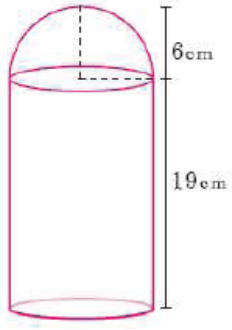
48. The internal and external radii of a hollow hemispherical shell are $3m$ and $5m$ respectively. Find the T.S.A. and C.S.A. of the shell.

49. An industrial metallic bucket is in the shape of the frustum of a right circular cone whose top and bottom diameters are $10m$ and $4m$ and whose height is $4m$. Find the curved and total surface area of the bucket.

50. The radius and height of a cylinder are in the ratio $5:7$ and its curved surface area is $5500 sq.cm$. find its radius and height.
51. A solid iron cylinder has total surface area of $1848 sq.m$. its curved surface area is five-sixth of its total surface area. Find the radius and height of the iron cylinder.
52. The frustum shaped outer portion of the table lamp has to be painted including the top part. Find the total cost of painting the lamp if the cost of painting $1 sq.cm$ is $Rs.2$.

53. The volume of a cylindrical water tank is 1.078×10^6 litres. If the diameter of the tank is $7m$, find its height.
54. The volume of a solid hemisphere is $29106 cm^3$. Another hemisphere whose volume is two-third of the above is carved out. Find the radius of the new hemisphere.
55. If the radii of the circular ends of a frustum which is $45cm$ high are $28cm$ and $7cm$, find the volume of the frustum.
56. A toy is in the shape of a cylinder surmounted by a hemisphere. The height of the top is $25cm$. Find the total surface area of the top if its common diameter is 12cm.



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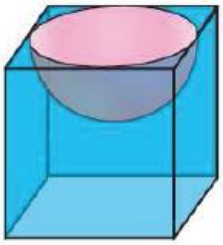
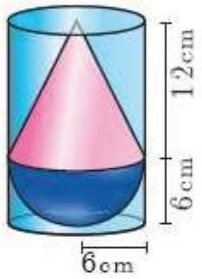
57. A jewel box is in the shape of a cuboid of dimensions $30cm$ Rs.15cm Rs.10cm surmounted bya half part of a cylinder as shown in the figure. Find the volume and T.S.A. of the box.

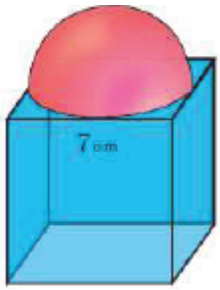
58. Arul has to make arrangements for the accommodation of 150 persons for his family function. For this purpose, he plans to build a tent which is in the shape of cylinder surmounted by a cone. Each person occupies, $4sq.m$ of the space on ground and $40cu$.meter of air to breathe. What should be the height of the conical part of the tent if the height of cylindrical part is $8m$?
59. A hemispherical section is cut out from one face of a cubical block such that the diameter I of the hemisphere is equal to side length of the cube. Determine the surface area of the remaining solid.



60. From a solid cylinder whose height is $2.4cm$ and the diameter $1.4cm$, a cone of the same height and same diameter is carved out. Find the volume of the remaining solid to the nearest cm^3.
61. A solid consisting of a right circular cone of height $12cm$ and radius $6cm$ standing on a hemisphere of radius $6cm$ is placed upright in a right cylinder full of water such that it touches the bottom. Find the volume of the water displaced out of the cylinder, if the radius of the cylinder is $6cm$ and height is $18cm$.



62. Capsule is in the shape of a cylinder with two hemisphere stuck to each of its ends. If the length of the entire capsule is $12mm$ and the diameter of the capsule is $3mm$, how much medicine it can hold?
63. As shown in figure a cubical block of side $7cm$ is surmounted by a hemisphere. Find the surface area of the solid.



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64. A shuttle cock used for playing badminton has the shape of a frustum of a cone is mounted on a hemisphere. The diameters of the frustum are $5cm$ and $2cm$. The height of the entire shuttle cock is $7cm$. Find its external surface area.
65. The slant height of a frustum of a cone is $4m$ and the perimeter of circular ends are $18m$ and $16m$. Find the cost of painting its curved surface area at $Rs.100$ per sq.m.
66. The volume of a cone is $1005\frac{5}{7}cu$. Cm. The area of its base is $201\frac{1}{7}$sq.cm. Find the slant height of the cone.

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