INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

SURFACE AREAS AND VOLUMES WORKSHEET

OBJECTIVE TYPE (1 Mark)

Q.1. Two cubes each with edge 6 cm edge are joined end to end. The surface area of the resulting cuboid is

	A	460 cm^2	**B**	360 cm^2	**C**	36 cm^2	**D**	46 cm^2

Q.2. A cone and a cylinder have the same base radius and volume. The (height of cone: height of cylinder) is

	A	1:1	**B**	1:3	**C**	3:2	**D**	3:1

Q.3. The curved surface area of a cone with base radius 7 cm is 550 cm^2. The slant height of the cone is

	A	25 cm	**B**	14 cm	**C**	20 cm	**D**	24 cm

Q.4. The largest possible cone is just fitted inside a hollow cube of edge 25 cm. The radius of the base of the cone is

	A	5 cm	**B**	25 cm	**C**	12.5 cm	**D**	10 cm

Q.5. Curved surface area of a cylinder of height 5 cm is 94.2 cm^2, then the radius of the cylinder is (take $\pi = 3.14$)

	A	2 cm	**B**	3 cm	**C**	2.9 cm	**D**	6 cm

Q.6. A cubical ice cream bar of edge 22 cm is to be distributed among some children by filling ice cream cones of radius 2 cm and height 7 cm up to its brim. How many children will get the ice-cream cones?

	A	363	**B**	163	**C**	463	**D**	263

Q.7. A solid spherical ball fits exactly inside the cubical box of side 2a. Then the volume of the ball in cubic units is

	A	$\frac{16}{3}\pi a^3$	**B**	$\frac{1}{6}\pi a^3$	**C**	$\frac{32}{3}\pi a^3$	**D**	$\frac{4}{3}\pi a^3$

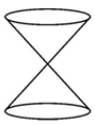
Q.8. The radius of a sphere(in cm) whose volume is 12 πcm^3 is

	A	3 cm	**B**	$3\sqrt{3}$ cm	**C**	$3^{\frac{2}{3}}$ cm	**D**	$3^{\frac{1}{3}}$ cm

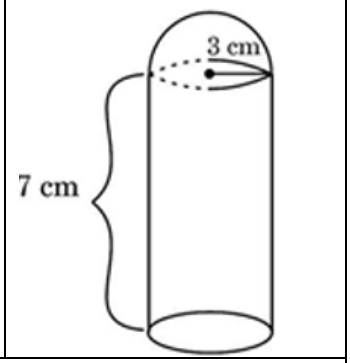
Q.9. A cube of side 6 cm is cut into a number of cubes, each of side 2 cm, then the number of cubes will be

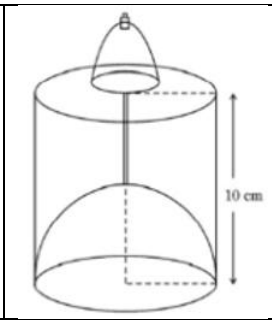
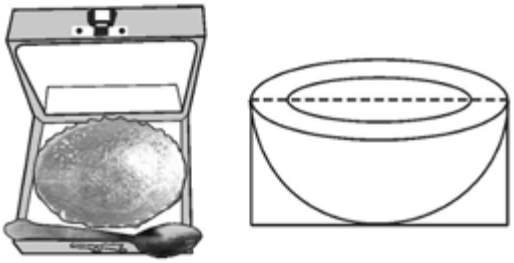
	A	27	**B**	37	**C**	17	**D**	47

Q.10. Two identical cones are joined as shown in the figure. If radius of base is 4 cm and slant height of the cone is 6 cm, then height of the solid is



	A	8 cm	**B**	$4\sqrt{5}cm$	**C**	$2\sqrt{5}cm$	**D**	12 cm

	ASSERTION AND REASONING
	DIRECTION: A statement of **Assertion (A)** is followed by a statement of **Reason (R).** Choose the correct option. (a)Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.
Q.11.	Assertion(A): Total surface area of the cylinder having radius of the base 14 cm and height 30 cm is 3872 cm^2. Reason(R): If r be the radius and h be the height of the cylinder, then total surface area is $2\pi rh + 2\pi r^2$.
Q.12.	Assertion(A): In the given figure, a toy is in the form of a cylinder surmounted by a hemisphere of the same radius. If the radius of the cylinder is 3 cm and its height is 7 cm, then the volume of toy is 18 π cm^3. Reason(R): Volume of the given solid is the sum of the volume of the cylinder and the volume of the hemisphere. 
	Questions of 2 marks each
Q.13.	A girl empties a cylindrical bucket, full of sand, of base radius 18 cm and height 32 cm, on the floor to form a conical heap of sand. If the height of this conical heap is 24 cm, then find its slant height correct up to one place of decimal.
Q.14.	If the volume of air in a hollow cylinder is 450cm^3 also a cone of same height and radius as that of cylinder is kept inside it. Find the volume of empty space in the cylinder.
Q.15.	If surface areas of the two spheres are in the ratio 16:9,then find the ratio of their volumes.
	Questions of 3 marks each
Q.16.	From each end of a solid cylinder of height 20 cm and base radius 7 cm, a cone of base radius 2.1 cm and height 5 cm is cooped out. Find the volume of the remaining solid.
Q.17.	From a solid cylinder of height 24 cm and radius 5 cm, two cones of height 12 cm and radius 5 cm are hollowed out. Find the surface area of the remaining solid.
Q.18.	From a solid cone, whose height is 16 cm and radius 12 cm and conical cavity of height 3 cm and base radius 4 cm is hollowed out such that the bases of the cones form concentric circles. Find the total surface area of the remaining solid.
Q.19.	A hemispherical bowl of internal diameter 42 cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3 cm and height 8 cm. How many bottles are required to empty the bowl?
Q.20.	A cubical block is surmounted by a hemisphere of radius 3.5 cm. What is the smallest possible length of the edge of the cube so that the hemisphere can totally lie on the cube? Find the total surface area of the solid so formed.
	Questions of 5 marks each
Q.21.	A carpenter is making a wooden toy (lattu) which is conical in shape and surmounted by a hemisphere. The ratio of the height of the hemisphere and the cone is 3 :4. If the radius of the cone and the hemisphere is 2.1 cm, find the volume of wood required to make this toy.Also, find the area to be painted after making the toy.

Q.22.	A solid is composed of a cylinder with hemispherical ends. If the total height of the solid is 16.2 cm and the diameter of the cylinder is 4.2 cm, find the volume and surface area of solid.
Q.23.	A perfume bottle is in the form of a cylinder but the bottom of the bottle has a hemispherical raised portion portion to reduce the capacity of the bottle. The inner diameter of the bottle is 5 cm and the height of the bottle is 10 cm. Find the capacity of the perfume bottle in mL.(use π =3.14, 1 cu.cm= 1 mL) 
	CASE STUDY QUESTION: A hemispherical bowl is packed in a cubical box. The bowl just fits in the box. Iner radius of the bowl is 10 cm. Outer radius of the bowl is 10.5 cm. Based on the above information, answer the following questions. 
Q.24.	Find the dimensions of the cuboidal box.
Q.25.	Find the total outer surface area of the box.
Q.26.	Find the difference between the capacity of the bowl and the volume of the box.(use $\pi = 3.14$)
Q.27.	The inner surface of the bowl and the thickness is to be painted. Find the area to be painted.

ANSWERS

Q.1.	B	**Q.2.**	D	**Q.3.**	A	**Q.4.**	C
Q.5.	B	**Q.6.**	A	**Q.7.**	D	**Q.8.**	C
Q.9.	A	**Q.10.**	B	**Q.11.**	a	**Q.12.**	d
Q.13.	43.2 cm	**Q.14.**	300 cm^3	**Q.15.**	64: 27	**Q.16.**	3033.8 cu.cm
Q.17.	1162.85 sq.cm	**Q.18.**	388π sq.cm	**Q.19.**	86 (85.75)	**Q.20.**	332.5 sq.cm
Q.21.	32.24 cu.cm, 50.82 sq.cm.	**Q.22.**	205.13 cu.cm, 213.84 sq.cm	**Q.23.**	163.5 mL	**Q.24.**	21cm x 21cm x 10.5cm
Q.25.	1764 sq.cm	**Q.26.**	15223/6 cu.cm	**Q.27.**	9251/14 sq.cm		

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