KD EDUCATION ACADEMY [9582701166]

STD 9 Maths

Time : 8 hour

Total Marks : 310

kd 90+ questions ch- 11 Surface ,Area and volume

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* Choose the right answer from the given options. [1 Marks Each] **[83]**

1. If a spherical balloon grows to twice its radius when inflated, then the ratio of the volume of the inflated balloon to the original balloon is:

   (A) 5 : 1   (B) 4 : 1   (C) 8 : 1   (D) 6 : 1

2. An ice cream cone has hemispherical top. If the height of the cone is 9cm and base radius is 2.5cm, then the volume of ice cream is:

   (A) $90.67cm^3$ (B) $96.67cm^3$ (C) $91.67cm^3$ (D) $91.76cm^3$

3. If the ratio of volumes of two spheres is 1 : 8, then the ratio of their surface areas is

   (A) 1 : 2   (B) 1 : 4   (C) 1 : 8   (D) 1 : 16

4. The radius of a hemispherical balloon increases from 6cm to 12cm as air is being pumped into it. The ratios of the surface areas of the balloon in the two cases is.

   (A) 1 : 4   (B) 2 : 3   (C) 1 : 3   (D) 2 : 1

5. A cylindrical rod whose height is 8 times of its radius is melted and recast into spherical balls of same radius. The number of balls will be:

   (A) 3   (B) 6   (C) 8   (D) 4

6. The total surface area of a cube is $96cm^2$. Find its lateral surface area.

   (A) $64cm^2$ (B) $512cm^2$ (C) $27cm^2$ (D) $32cm^2$

7. How many lead shots, each 0.3cm in diameter, can be made from a cuboid of dimension 9cm × 11cm × 12cm?

   (A) 7200   (B) 8400   (C) 72000   (D) 84000

8. The CSA of a right circular cylinder whose base radius is x units and height is z units is:

   (A) πxz sq.units   (B) $2\pi xz$ sq.units   (C) $\pi x^2 z$ sq.units   (D) 2π sq.units

9. The number of planks of dimension (4m × 5m × 2m) that can be stored in a pit which is 40m long, 12m wide and 16m deep, is:

   (A) 190   (B) 192   (C) 184   (D) 180

10. If a cone is cut into two parts by a horizontal plane passing through the mid-point of its axis, the axis, the ratio of the volumes of upper and lower part is:

    (A) 1 : 2   (B) 2 : 1   (C) 1 : 7   (D) 1 : 8

11. If A_1, A_2 and A_3 denote the areas of three adjacent faces of a cuboid, then its volume is:

    (A) $A_1 A_2 A_3$ (B) $2A_1 A_2 A_3$ (C) $\sqrt{A_1 A_2 A_3}$ (D) $\sqrt[3]{A_1 A_2 A_3}$

12. The diameter of a roller, 1m long, is 84cm. If it takes 500 complete revolutions to level a playground, the area of the playground is:

    (A) $1440m^2$ (B) $1320m^2$ (C) $1260m^2$ (D) $1550m^2$

13. The volumes of two spheres are in the ratio 64 : 27 and the sum of their radii is 7cm. The difference in their total surface areas is:

    (A) $38cm^2$ (B) $58cm^2$ (C) $78cm^2$ (D) $88cm^2$

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14. The slant height of a cone is increased by 10%. If the radius remains the same, the curved surface area is increased by.

    (A) 10%　　　　　(B) 21%　　　　　(C) 12.1%　　　　　(D) 20%

15. The volume of a right circular cylinder is $2310cm^3$. If the radius of its base is 7cm, then its height is

    (A) 7.5cm　　　　(B) 22.5cm　　　　(C) 15cm　　　　(D) 30cm

16. If the ratio of the volumes of two spheres is 1 : 8 then the ratio of their surface area is:

    (A) 1 : 2　　　　(B) 1 : 4　　　　(C) 1 : 8　　　　(D) 1 : 16

17. If a sphere is inscribed in a cube, then the ratio of the volume of the cube to the volume of the sphere is:

    (A) $\pi : 6$　　　　(B) $4 : \pi$　　　　(C) $\pi : 4$　　　　(D) $6 : \pi$

18. The volume of a spherical shell is given by:

    (A) $\frac{4}{3}\pi(R^2 - r^2)$　　　(B) $\frac{4}{3}\pi(R^3 - r^3)$　　　(C) $\pi(R^3 - r^3)$　　　(D) $4\pi(R^3 - r^3)$

19. A river 1.5m deep and 30m wide is flowing at the rate of 3km per hour. The volume of water that rims into the sea per minute is.

    (A) $2250m^3$　　　(B) $2750m^3$　　　(C) $2500m^3$　　　(D) $2000m^3$

20. The sum of the length, breadth and depth of a cuboid is 19cm and its diagonal is $5\sqrt{5}$. Its surface area is.

    (A) $125cm^2$　　　(B) $361cm^2$　　　(C) $236cm^2$　　　(D) $486cm^2$

21. The volumes of two spheres are in the ratio 125 : 64. The ratio of their surface areas is:

    (A) 25 : 16　　　(B) 9 : 16　　　(C) 16 : 25　　　(D) 16 : 9

22. If the base radius and the height of a right circular cone are increased by 20%, then the percentage increase in volume is approximately:

    (A) 60　　　　(B) 68　　　　(C) 73　　　　(D) 78

23. The ratio of the radii of two spheres whose volumes are in the ratio 64 : 27 is:

    (A) 4 : 3　　　　(B) 10 : 7　　　　(C) 8 : 3　　　　(D) 16 : 9

24. The ratio of the radii of two spheres whose volumes are in the ratio 64 : 27 is:

    (A) It is 4 : 3.　　　(B) It is 8 : 3.　　　(C) It is 10 : 7.　　　(D) It is 16 : 9.

25. Two right circular cones have equal radii. If their slant heights are in the ratio 4 : 3, then their respective curved surface areas are in the ratio:

    (A) 6 : 8　　　　(B) 3 : 4　　　　(C) 4 : 3　　　　(D) 16 : 9

26. The radii of the bases of a cylinder and a cone are in the ratio 3 : 4 and their heights are in the ratio 2 : 3. Then, their volumes are in the ratio:

    (A) 9 : 8　　　　(B) 8 : 9　　　　(C) 3 : 4　　　　(D) 4 : 3

27. The length, width and height of a rectangular solid are in the ratio of 3 : 2 : 1. If the volume of the box is $48cm^3$, the total surface area of the box is:

    (A) $27cm^2$　　　(B) $32cm^3$　　　(C) $44cm^3$　　　(D) $88cm^3$

28. A sphere and a cube are of the same height. The ratio of their volumes is:

    (A) 21 : 11　　　(B) 4 : 3　　　(C) 11 : 21　　　(D) 3 : 4

29. The cost of digging a pit of dimensions 4.5m × 2.5m × 2.5m at the rate of ₹ 20 per cubic metre is:

(A) ₹ 281.25   (B) ₹ 1687.50   (C) ₹ 1125   (D) ₹ 562.50

30. How many bricks will be required to construct a wall 8m long, 6m high and 22.5cm thick if each brick measures (25cm × 11.25 × 6cm)?

(A) 4800   (B) 5600   (C) 6400   (D) 5200

31. The ratio between the radius of the base and the height of a cylinder is 2 : 3. If its volume is $1617 cm^3$, then its total surface area is:

(A) $308 cm^2$ (B) $462 cm^2$ (C) $540 cm^2$ (D) $770 cm^2$

32. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is:

(A) 20 : 27   (B) 125 : 27   (C) 10 : 9   (D) 8 : 27

33. A right circular cylinder and a right circular cone have the same radius and the same volume. The ratio of the height of the cylinder to that of the cone is:

(A) 3 : 5   (B) 3 : 1   (C) 1 : 3   (D) 2 : 5

34. Write the correct answer in the following:

The lateral surface area of a cube is $256 m^2$. The volume of the cube is:

(A) $512 m^3$ (B) $64 m^3$ (C) $216 m^3$ (D) $256 m^3$

35. 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 reduced cylinder to the volume of the original cylinder is:

(A) 2 : 1   (B) 1 : 4   (C) 1 : 2   (D) 4 : 1

36. The ratio of the volume of a right circular cylinder and a right circular cone of the same base and height, is:

(A) 4 : 3   (B) 3 : 4   (C) 3 : 1   (D) 1 : 3

37. The area of the curved surface of a cone of radius 2r and slant height $\frac{1}{2}$, is:

(A) $12\pi rl$ (B) $2\pi rl$ (C) $\pi(r+l)r$ (D) πrl

38. Two cylindrical jars have their diameters in the ratio 3 : 1, but height 1 : 3. Then the ratio of their volumes is:

(A) 1 : 4   (B) 1 : 3   (C) 3 : 1   (D) 2 : 5

39. If the surface area of a sphere is $144\pi m^2$ then its volume (in m^3) is:

(A) 300π (B) 188π (C) 316π (D) 288π

40. The volume of a right circular cone of height 24cm is $1232 cm^3$. Its curved surface area is.

(A) $704 cm^2$ (B) $1254 cm^2$ (C) $550 cm^2$ (D) $462 cm^2$

41. If h, S and V denote respectively the height, curved surface area and volume of a right circular cone, then $3\pi Vh^3 - S^2h^2 + 9V^2$ is equal to:

(A) 8 (B) 0 (C) 4π (D) $32\pi^2$

42. The number of surfaces of a cone has, is:

(A) 1   (B) 3   (C) 4   (D) 2

43. If a solid sphere of radius 10cm is moulded into 8 spherical solid balls of equal radius, then the surface area of each ball (in sq.cm) is:

(A) 100π (B) 75π (C) 60π (D) 50π

44. The slant height of a cone is increased by 10%. If the radius remains the same, the curved surface area is increased by:

(A) 10%　　　　(B) 12.1%　　　　(C) 20%　　　　(D) 21%

45. A cube whose volume is $\frac{1}{8}$ cubic centimeter is placed on top of a cube whose volume is $1cm^3$. The two cubes are then placed on top of a third cube whose volume is $8cm^3$. The height of the stacked cubes is:

(A) None of these　　　　(B) 3cm　　　　(C) 3.5cm　　　　(D) 7cm

46. Volume of a cuboid is $12cm^3$. The volume (in cm^3) of a cuboid whose side are doubled of the above cuboid is:

(A) 24　　　　(B) 48　　　　(C) 72　　　　(D) 96

47. How many planks of dimensions (5m × 25cm × 10cm) can be stored in a pit which is 20m long, 6m wide and 50cm deep?

(A) 320　　　　(B) 450　　　　(C) 480　　　　(D) 360

48. The volume of a cube is $512cm^3$. Its total surface area is:

(A) $512cm^2$　　　　(B) $256cm^2$　　　　(C) $384cm^2$　　　　(D) $64cm^2$

49. If each edge of a cube is increased by 50%, then the percentage increase in its surface area is.

(A) 75%　　　　(B) 50%　　　　(C) 100%　　　　(D) 125%

50. A solid cylinder is melted and cast into a cone of same radius. The heights of the cone and cylinder are in the ratio:

(A) 3 : 1　　　　(B) 1 : 9　　　　(C) 9 : 1　　　　(D) 1 : 3

51. In a cylinder, if radius is halved and height is doubled, the curved surface area will be:

(A) Halved　　　　(B) Same　　　　(C) Doubled　　　　(D) Four times

52. If V is the volume of a cuboid of Dimensions x, y, z and A is its surface area, then $\frac{A}{V}$

(A) $x^2y^2z^2$　　(B) $\frac{1}{2}\left(\frac{1}{xy}+\frac{1}{yz}+\frac{1}{zx}\right)$　　(C) $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$　　(D) $\frac{1}{xyz}$

53. If the height of a cone is doubled then its volume is increased by:

(A) 100%　　　　(B) 200%　　　　(C) 300%　　　　(D) 400%

54. The volume of a sphere is $38808cm^3$. Its curved surface area is:

(A) $5544cm^2$　　　　(B) $8316cm^2$　　　　(C) $4158cm^2$　　　　(D) $1386cm^2$

55. The height h of a cylinder equals the circumference of the cylinder. In terms of h, what is the volume of the cylinder:

(A) $\frac{h^2}{4\pi}$　　　　(B) πh^3　　　　(C) $\frac{h^3}{2}$　　　　(D) $\frac{h^2}{2\pi}$

56. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The length of the minute hand of a clock is 7cm. Then the area swept by the minute hand in 5 minute is $\frac{77}{6}cm^2$.

Reason: The length of an arc of a sector of angle q and radius r is given by $I = \frac{\theta}{360°} \times 2\pi r$.

(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 but 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.

57. If the height and the radius of a cone are doubled, the volumes of the cone becomes:

(A) 3 times. (B) 4 times. (C) 6 times. (D) 8 times.

58. If the volume of two cones be in the ratio 1 : 4 and the radii of their bases be in the ratio 4 : 5 then the ratio of their heights is:

(A) 1 : 5 (B) 5 : 4 (C) 25 : 16 (D) 25 : 64

59. The ratio between the curved surface area and the total surface area of a right circular cylinder is 1 : 2. If the total surface area is 616cm^2 then the volume of the cylinder is.

(A) 1848cm^3 (B) 924cm^3 (C) 1232cm^3 (D) 1078cm^3

60. Each edge of a cube is increased by 40%. The % increase in the surface area is.

(A) 24% (B) 60% (C) 96% (D) 40%

61. Two circular cylinders of equal volume have their heights in the ratio 1 : 2. The ratio of their radii is:

(A) $1 : \sqrt{2}$ (B) $\sqrt{2} : 1$ (C) $1 : 2$ (D) $1 : 4$

62. If the volumes of two cones are in the ratio 1 : 4 and their diameters are in the ratio 4 : 5, then the ratio of their heights, is:

(A) 25 : 64 (B) 5 : 16 (C) 5 : 4 (D) 1 : 5

63. A sphere of diameter 12.6cm is melted and cast into a right circular cone of height 25.2cm. The radius of the base of the cone is:

(A) 6.3cm (B) 2.1cm (C) 6cm (D) 4cm

64. A conical pandal 240m in radius and 100m high is made of cloth which is 100π wide. Then, the length of cloth used to make the pandal is:

(A) 624m. (B) 676m. (C) 600m. (D) 625m.

65. The radius of a wire is decreased to one-third. If volume remains the same, the length will become:

(A) 9 times (B) 3 times (C) 27 times (D) 6 times

66. He surface areas of two spheres are in the ratio 16 : 9. The ratio of their volumes is:

(A) 64 : 27 (B) 27 : 64 (C) 16 : 27 (D) 16 : 9

67. A cone is 8.4cm high and the base is 2.1cm. It is melted and recast into a sphere. The radius of the sphere is:

(A) 4.2cm (B) 2.1cm (C) 2.4cm (D) 1.6cm

68. The altitude of a circular cylinder is increased six times and the base area is decreased one-ninth of its value. The factor by which the lateral surface of the cylinder increases, is:

(A) $\frac{2}{3}$ (B) $\frac{1}{2}$ (C) $\frac{3}{2}$ (D) 2

69. If the TSA of a solid cylinder is 200π sq .cm and its radius is 5cm then the sum of its height and radius is:

(A) 20cm (B) 15cm (C) 25cm (D) 10cm

70. The curved surface area of a cylindrical pillar is 264m^2 and its volume is 924m^3. The height of the pillar is.

(A) 5m   (B) 4m   (C) 6m   (D) 7m

71. If the radius of a cylinder is doubled and the height remains same, the volume will be:

(A) Halved   (B) Doubled   (C) Same   (D) Four times

72. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. The ratio of their volumes is:

(A) 3 : 2 : 1   (B) 2 : 3 : 1   (C) 2 : 1 : 3   (D) 1 : 2 : 3

73. The volume of a cylinder of radius r is $\frac{1}{4}$ of the volume of a rectangular box with a square base of side length x. If the cylinder and the box have equal heights, what is r in terms of x?

(A) $\frac{x^2}{2\pi}$ (B) $\frac{x}{2\sqrt{\pi}}$ (C) $\frac{\sqrt{2}x}{\pi}$ (D) $\frac{\pi}{2\sqrt{x}}$

74. If a sphere is inscribed in a cube, then the ratio of the volume of the sphere to the volume of the cube is:

(A) $\pi : 2$ (B) $\pi : 3$ (C) $\pi : 4$ (D) $\pi : 6$

75. The radii of the bases of a cylinder and a cone are in the ratio 3 : 4 and their heights are in the ratio 2 : 3. Then, their volumes are in the ratio:

(A) 9 : 8   (B) 3 : 4   (C) 4 : 3   (D) 8 : 9

76. If the height of a cone is doubled then its volume is increased by.

(A) 400%   (B) 100%   (C) 200%   (D) 300%

77. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their curved surface areas is

(A) 10 : 9   (B) 8 : 7   (C) 16 : 9   (D) 2 : 5

78. A river 1.5m deep and 30m wide is flowing at the rate of 3km per hour. The volume of water that runs into the sea per minute is:

(A) 2000m^3 (B) 2250m^3 (C) 2500m^3 (D) 2750m^3

79. If each edge of a cube, of volume V, is doubled, then the volume of the new cube is.

(A) 4V   (B) 6V   (C) 8V   (D) 2V

80. The radius and height of a right circular cylinder are each increased by 20%. The volume of cylinder is increased by-

(A) 72.8%   (B) 54%   (C) 20%   (D) 40%

81. If the radius and slant height of a cone are in the ratio 7 : 13 and its curved surface area is 286cm^2 then its radius is:

(A) 7.5cm.   (B) 10cm.   (C) 10.5cm.   (D) 7cm.

82. If h, S and V denote respectively the height, curved surface area and volume of a right circular cone, $3\pi Vh^3 - S^2h^2 + 9V^2$ is equal to:

(A) 4π (B) 0 (C) $32\pi^2$ (D) 8

83. If V is the volume of a cuboid of dimensions x, y, z and A is its surface area, then $\frac{A}{V}$.

(A) $\frac{1}{2}\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right)$ (B) $x^2y^2z^2$ (C) $\frac{1}{2}\left(\frac{1}{xy} + \frac{1}{yz} + \frac{1}{zx}\right)$ (D) $\frac{1}{xyz}$

*   A statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

84. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: If the inner dimensions of a cuboidal box are 50cm × 40cm × 30cm, then the length of the longest rod that can be placed in the box is $50\sqrt{2}\text{cm}$.

    Reason: The line joining opposite corners of a cuboid is called its diagonal.
        Also, length of longest rod = length of diagonal.
    $$= \sqrt{l^2 + b^2 + h^2}$$

    a.   Both assertion and reason are true and reason is the correct explanation of assertion.
    b.   Both assertion and reason are true but reason is not the correct explanation of assertion.
    c.   Assertion is true but reason is false.
    d.   Assertion is false but reason is true.

85. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: The slant height of the frustum of a cone is 5cm and the difference between the radii of its two circular ends is 4cm than the height of the frustum is 3cm.

    Reason: Slant height of frustum of cone is given by $I = \sqrt{(R - r)^2 + h^2}$

    a.   Both Assertion and reason are correct and reason is correct explanation for Assertion.
    b.   Both Assertion and reason are correct but reason is not correct explanation for Assertion.
    c.   Assertion is correct but reason is false.
    d.   Both Assertions and reason are false.

86. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: The total surface area of a cone whose radius is $\frac{r}{2}$ and slant height 2l is $(\pi)r(l + \frac{r}{4})$.

    Reason: Total surface area of cone is $\pi r(l+r)$ where r is radius and I is the slant height of the cone.

    a.   Both assertion and reason are true and reason is the correct explanation of assertion.
    b.   Both assertion and reason are true but reason is not the correct explanation of assertion.
    c.   Assertion is true but reason is false.
    d.   Assertion is false but reason is true

87. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: The radius of hemispherical balloon increase from 6cm to 12cm as air is being pumped into it the ratio of the surfaces areas of balloon in two cases is 1 : 4.

Reason: Total surface area of hemisphere $= 3\pi r^2$

   a. Both Assertion and reason are correct and reason is correct explanation for Assertion.

   b. Both Assertion and reason are correct but reason is not correct explanation for Assertion.

   c. Assertion is correct but reason is false.

   d. Both Assertions and reason are false.

88. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: Volume of sphere $= \frac{4}{3}\pi r^3$ and it's surface area $4\pi r^2$

    Reason: If the volumes of two spheres are in the ratio 27 : 8 then their surface area are in ratio 9 : 4

       a. Both Assertion and reason are correct and reason is correct explanation for Assertion.

       b. Both Assertion and reason are correct but reason is not correct explanation for Assertion.

       c. Assertion is correct but reason is false.

       d. Both Assertions and reason are false.

* Answer the following questions in one sentence. [1 Marks Each]   [2]

89. Find the amount of water displaced by a solid spherical ball of diameter 0.21 m.

90. Savitri had to make a model of a cylindrical Kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the Kaleidoscope. What should be the area of chart paper required by her, if she wanted to make a Kaleidoscope of length 25 cm with a 3.5 cm radius? You may take $\pi = \frac{22}{7}$.

* Answer the following short questions. [2 Marks Each]   [10]

91. A right circular cylinder just encloses a sphere of radius r. Find

       i. surface area of the sphere.

       ii. curved surface of the cylinder.

       iii. ratio of the area obtained in (i) and (ii).

92. The pillars of a temple are cylindrically shaped if each pillar has a circular base of radius 20cm and height 10 m. How much concrete mixture would be required to build 14 such

pillars?

93. Three cubes of metal with edges 3cm, 4cm and 5cm respectively are melted to form a single cube. Find the lateral surface area of the new cube formed.

94. A cylindeical tub of radius 12cm contains water to a depth of 20cm. A sphrical iron ball is dropped into the tub and thus the leval of water is raised by 6.75cm. What is the radius of the ball.

95. The surface area of sphere is $(576\pi)\text{cm}^2$. Find its volume. $\left(\text{Take } \pi = \frac{22}{7}\right).$

* **Answer the following questions. [3 Marks Each]** [48]

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

97. A right triangle ABC with its sides 5 cm, 12 cm, and 13 cm is revolved about the side 12 cm. Find the volume of the solid so formed. If the triangle ABC is revolved about side 5 cm, then find the volume of the solid so obtained. Find also the ratio of the volumes of the two solids obtained.

98. The diameter of the moon is approximately one-fourth the diameter of the earth. What fraction is the volume of the moon of the volume of the earth?

99. A corn cob (see Fig.), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length as 20 cm. If each 1 cm^2 of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob?
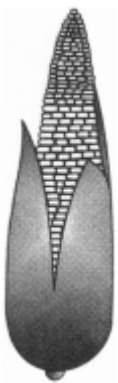
100. At a Ramzan Mela, a stall keeper in one of the food stalls has a large cylindrical vessel of the base radius 15 cm filled upto a height of 32 cm with the orange juice. The juice is filled in small cylindrical glasses (see figure) of radius 3 cm upto a height of 8 cm and sold for Rs.15 each. How much money does the stall keeper receive by selling the juice

completely?
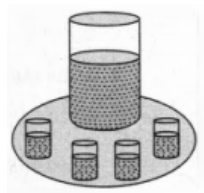
101. Find the weight of a solid cone whose base is of diameter 14cm and vertical height 51cm, supposing the material of which it is made weighs 10 grams per cubic cm.

102. The area of the curved surface of a cone is $60\pi\text{cm}^2$. If the slant height of the cone be 8cm, find the radius of the base.

103. A tent is in the form of a right circular cylinder surmounted by a cone. The diameter of cylinder is 24m. The height of the cylindrical portion is 11m while the vertex of the cone is 16m above the ground. Find the area of the canvas required for the tent.

104. A conical pit of top diameter 3.5m is 12m deep. What is its capacity in kilolitres?

105. There are two cones. The curved surface area of one is twice that of the other. The slant height of the later is twice that of the former. Find the ratio of their radii.

106. The dome of a building is in the form of a hemisphere. Its radius is 63dm. Find the cost of painting it at the rate of Rs. 2 per sq m.

107. If a sphere is inscribed in a cube, find the ratio of the volume of cube to the volume of the sphere.

108. A sphere, a cylinder, and a cone have the same diameter. The height of the cylinder and also the cone are equal to the diameter of the sphere. Find the ratio of their volumes.

109. A cylindrical tub of radius 12cm contains water to a depth of 20cm. A spherical form ball is dropped into the tub and thus the level of water is raised by 6.75cm. What is the radius of the ball?

110. The diameter of the moon is approximately one-fourth of the diameter of the earth. Find the ratio of their surface areas.

111. A spherical ball of radius 3cm is melted and recast into three spherical balls. The radii of two of these balls are 1.5cm and 2cm. Find the radius of the third ball.

*** Questions with calculation. [4 Marks Each]** [108]

112. 30 circular plates, each of radius 14cm and thickness 3cm are placed one above the another to form a cylindrical solid. Find:
    i.   The total surface area.
    ii. Volume of the cylinder so formed.

113. A cube of side 4cm contains a sphere touching its sides. Find the volume of the gap in between.

114. The length and breadth of a hall are in the ratio 4 : 3 and its height is 5.5 meters. The cost of decorating its walls (including doors and windows) at ₹ 6.60 per square meter is ₹ 5082. Find the length and breadth of the room.

115. A village having a population of 4000 requires 150 liters of water per head per day. It has a tank measuring 20m × 15m × 6m. For how many days will the water of this tank last?

116.

The dimentional of rectangular box are inthe ratio of 2 : 3 : 4 and the difference between the cost of covering it with sheet of paper at the rates of ₹ 8 and ₹ 9.50 per m^2 is ₹ 1248. Find the dimensions of the box.

117. A rectangular tank is 80m long and 25m broad. Water flows into it through a pipe whose cross-section is 25cm^2, at the rate of 16km per hour. How much the level of the water rises in the tank in 45 minutes?

118. A river 3m deep and 40m wide is flowing at the rate of 2km per hour. How much water will fall into the sea in a minute?

119. If V is the volume of a cuboid of dimensions a, b, c and S is its surface area, then prove that:

$$\frac{1}{V} = \frac{2}{S}\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$$

120. Twenty cylindrical pillars of the Parliament House are to be cleaned. If the diameter of each pillar is 0.50m and height is 4m.What will be the cost of cleaning them at the rate of ₹ 2.50 per square meter?

121. Water flows out through a circular pipe whose internal diameter is 2cm, at the rate of 6 meters per second into a cylindrical tank. The water is collected in a cylindrical vessel radius of whose base is 60cm. Find the rise in the level of water in 30 minutes?

122. A well with 10m inside diameter is dug 8.4m deep. Earth taken out of it is spread all around it to a width of 7.5m to form an embankment. Find the height of the embankment.

123. It is required to make a closed cylindrical tank of height 1m and the base diameter of 140cm from a metal sheet. How many square meters of the sheet are required for the same?

124. A well with 14m diameter is dug 8m deep. The earth taken out of it has been evenly spread all around it to a width of 21m to form an embankment. Find the height of the embankment.

125. The ratio between the radius of the base and height of a cylinder is 2 : 3. If its volume is 1617cm^3, find the total surface area of the cylinder.

126. If the radius and slant height of a cone are in the ratio 7 : 13 and its curved surface area is 286cm^2, find its radius.

127. The circumference of the base of a 10m height conical tent is 44m, calculate the length of canvas used in making the tent if width of canvas is 2m $\left(\text{Use } \pi = \frac{22}{7}\right)$.

128. The radius and the height of a right circular cone are in the ratio 5 : 12. If its volume is 314 cubic meter, find the slant height and the radius. $\left(\text{Use } \pi = 3.14\right)$.

129. What length of tarpaulin 4m wide will be required to make a conical tent of height 8m and base radius 6m? Assume that the extra length of material will be required for stitching margins and wastage in cutting is approximately 20cm. $\left(\text{Use } \pi = 3.14\right)$

130. A right angled triangles of which the sides containing the right angle are 6.3cm and 10cm in length, is made to turn round on the longer side. Find the volume of the solid, thus generated. Also, find its curved surface area.

131. A measuring jar of internal diameter 10cm is partially filled with water. Four equal spherical balls of diameter 2cm each are dropped in it and they sink down in water completely. What will be the change in the level of water in the jar?

132. The front compound wall of a house is decorated by wooden spheres of diameter 21cm, placed on small supports as shown in the Fig. Eight such spheres are used for this purpose, and are to be painted silver. Each support is a cylinder of radius 1.5cm and height 7cm and is to be painted black. Find the cost of paint required if silver paint costs 25 paise per cm^2 and black paint costs 5 paise per cm^2.
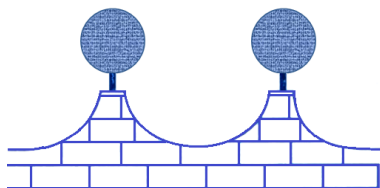
133. It costs ₹ 3300 to paint the inner curved surface of a cylindrical vessel 10m deep at the rate of ₹ 30 per m^2. Find the:
    i.   Inner curved surface area of the vessel.
    ii. Inner radius of the base.
    iii. Capacity of the vessel.

134. Water flows at the rate of 10 metres per minute through a cylindrical pipe 5mm in diameter. How long would it take to fill a conical vessel whose diameter art the surface 40cm and depth 24cm?

135. Water in a canal, 30dm wide and 12dm deep, is flowing with a velocity of 20km per hour. How much area will it irrigate, if 9cm of standing water is desired?

136. Each edge of a cube is increased by 50%. Find the percentage increase in the surface area of the cube.

137. A cylindrical bucket, 28cm in diameter and 72cm and high, is full of water. The water is emptied into a rectangular tank, 66cm long and 28cm wide. Find the height of the water level in the tank.

138. A man uses a piece of canvas having an area of 551m^2, to make a conical tent of base radius 7m. Assuming that all the stitching margins and wastage incurred while cutting, amount to approximately 1m^2, find the volume of the tent that can be made with it. $\left(\text{Use } \pi = \frac{22}{7}\right).$

* Answer the following questions. [5 Marks Each]   [30]

139. The volume of a right circular cone is $9856 \ cm^3$. If the diameter of the base if 28 cm, find:
    i.   Height of the cone
    ii. Slant height of the cone
    iii. Curved surface area of the cone.

140. Mary wants to decorate her Christmas tree. She wants to place the tree on a wooden block covered with coloured paper with picture of Santa Claus on it (see figure). She must know the exact quantity of paper to buy for this purpose. If the box has length, breadth and height as 80 cm, 40 cm and 20 cm respectively, then how many square sheets of paper of

side 40 cm would she require?

141. A sphere and a right circular cylinder of the same radius have equal volumes. By what percentage does the diameter of the cylinder exceed its height?

142. A cloth having an area of $165m^2$ is shaped into the form of a conical tent of radius 5m
    i. How many students can sit in the tent if a student, on an average, occupies $\frac{5}{7}m^2$ on the ground?
    ii. Find the volume of the cone.

143. The ratio between the curved surface area and the total surface area of a right circular cylinder is 1 : 2. Find the volume of the cylinder if its total surface area is $616cm^2$.

144. A well with inside diameter 10m is dug 8.4m deep. Earth taken out of it is spread all around it to a width of 7.5m to form an embankment. Find the height of the embankment.

* Case study based questions. [24]

145. Read the passage given below and answer these questions:

Once four friends Rahul, Arun, Ajay and Vijay went for a picnic at a hill station. Due to peak season, they did not get a proper hotel in the city. The weather was fine so they decided to make a conical tent at a park. They were carrying $300m^2$ cloth with them. As shown in the figure they made the tent with height 10m and diameter 14m. The remaining cloth was used for the floor.


    i. How much Cloth was used for the floor?
        a. $31.6m^2$
        b. $16m^2$
        c. $10m^2$
        d. $20m^2$
    ii. What was the volume of the tent?
        a. $300m^3$
        b. $160m^3$
        c. $513.3m^3$
        d. $500m^3$
    iii. What was the area of the floor?
        a. $50m^2$

b. $100m^2$

c. $150m^2$

d. $154m^2$

iv. What was the total surface area of the tent?

a. $400m^2$

b. $422.4m^2$

c. $300m^2$

d. $400m^2$

v. What was the latent height of the tent?

a. 12m

b. 12.2m

c. 15m

d. 17m

146. Read the Source/ Text given below and answer any four questions:

Veena planned to make a jewellery box to gift her friend Reeta on her marriage. She made the jewellery box of wood in the shape of a cuboid. The jewellery box has the dimensions as shown in the figure below. The rate of painting the exterior of the box is Rs. 2 per cm^2. After making the box she took help from his friends to decorate the box. The blue colour was painted by Deepak, Black by Suresh, green by Harsh and the yellow was painted by Naresh.
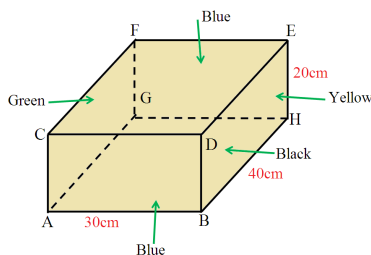
i. What is the volume of the box?

a. $24000cm^3$

b. $1200cm^3$

c. $800cm^3$

d. $600cm^3$

ii. How much area did Suresh paint?

a. $24000cm^2$

b. $1200cm^2$

c. $800cm^2$

d. $600cm^2$

iii. How much area did Deepak paint?

a. $24000cm^2$

b. $600cm^2$

c. $800cm^2$

d. $1200cm^2$

iv. What amount did Harsh charge?

a. Rs. 800

b. Rs. 1200

c. Rs. 1600

d. Rs. 2000

v. What amount did Veena pay for painting:

a. Rs. 2600
b. Rs. 5200
c. Rs. 5000
d. Rs. 6000

147. Read the passage given below and answer any four questions:

Sohan's house has one bedroom hall with kitchen. His son needed a separate room for study. Thus Sohan planned to construct a new room with length 4m, width 2m and the height 3m as shown in the following figure.

The room was separate at the roof of the house. The dimensions of the bricks used are: 25cm × 10cm × 5cm.

i. Total how many bricks will be required? ($1m^3 = 1000000cm^3$):
   a. 30000
   b. 40000
   c. 28800
   d. 27000

ii. How many bricks will be used on both walls along the length (length = 4m)?
   a. 19200
   b. 20200
   c. 18800
   d. 17000

iii. How many bricks will be used on both walls along the width (width = 3m)?
   a. 19200
   b. 9600
   c. 10000
   d. 15000

iv. What is the volume of the room?
   a. $24m^3$
   b. $12m^3$
   c. $20m^3$
   d. $15m^3$

v. What is the area of the floor?
   a. $10m^2$
   b. $12m^2$
   c. $8m^2$
   d. $8m^3$

148. Raju designs a hut for homeless people. The hut is a combination of a cuboid and a right cone. The top of the hut is a cone with radius 4 m and height 1 m. It is made of economical material. The loor of the tent is covered with rugs.

The total height of the tent is 4.5 m. The cuboidal part of the tent is 6 m long and 5 m wide.
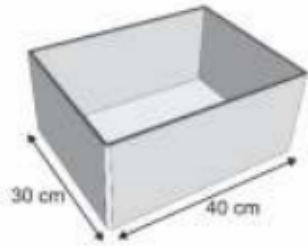
1. What is the outer surface area (in m²) of the hut?

   A. 77

   B. $77+4\pi\sqrt{17}$

   C. $137+4\pi\sqrt{17}$

   D. $137+4\pi(4+\sqrt{17})$

2. The length and width of a rug used for the loor are 2.6 m and 2 m respectively. What is the minimum number of rugs required to cover the loor of the tent house?

149. A company manufactures wooden boxes. Given below is the picture of an open wooden box.

The height of the box is 25 cm.

7. What is the surface area (in cm²) of the box?
   A. 3500
   B. 4700
   C. 5900
   D. 30000

8. A shopkeeper store cubes in it.
The side length of one cube is 9 cm.
What would be the maximum number of cubes the shopkeeper can store in a box? (All cubes should be inside the box.)

9. Rajan packs a football into a cubical cardboard box. The radius of the football is 11 cm. Rajan keeps a margin of 1 cm from all the sides of the box while packing.
What is the side length of the cardboard box?
   A. 11 cm
   B. 20 cm
   C. 22 cm
   D. 24 cm

150. This is the picture of an ice-cream cone.

The radius of the cone is 4 cm and the height is 15 cm.
An ice-cream seller keeps 1/4of it empty.

10. What is the volume (in cm³) of the empty part of the cone?
   A. 12π
   B. 15π
   C. 19π
   D. 20π

----- "Our greatest glory is not in never falling, but in rising every time we fall." -----