Date: 25/9/2021

**Q1.** Find the curved surface area of a right circular cone whose slant height is 10 cm and base radius is 7 cm.

Q2. Find the surface area of a sphere of radius 7 cm.

Q3. Find the volume of a sphere of radius 11.2 cm.

Q4. A hemispherical bowl has a radius of 3.5 cm. What would be the volume of water it would contain?

Q5. Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area.

Q6. Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m.

Q7. Find the total surface area of a hemisphere of radius 10 cm. (Use π = 3.14)

Q8. A matchbox measures 4 cm × 2.5 cm × 1.5 cm. What will be the volume of a packet containg 12 such boxes?

Q9. Find the capacity in litres of a conical vessel with
(i) radius 7 cm, slant height 25 cm   (ii) height 12 cm, slant height 13 cm

Q10. The height of a cone is 15 cm. If its volume is 1570 cm^3, find the radius of the base. (Use π = 3.14)

Q11. A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?

Q12. Find the surface area of a sphere of radius: 10.5 cm.

Q13. Find the surface area of a sphere of radius: 5.6 cm.

Q14. Find the surface area of a sphere of radius: 14 cm.

Q15. Find the surface area of a sphere of diameter: 14 cm.

Q16. Find the surface area of a sphere of diameter: 21 cm.

Q17. Find the surface area of a sphere of diameter: 3.5 m.

Q18. Find the volume of the right circular cone with radius 6 cm, height 7 cm.

Q19. Find the volume of the right circular cone with radius 3.5 cm, height 12 cm.

Q20. Find the capacity in litres of a conical vessel with radius 7 cm, slant height 25 cm.

Q21. Find the capacity in litres of a conical vessel with height 12 cm, slant height 13 cm.

Q22. Find the volume of a sphere whose radius is 7 cm.

**Q23.** Find the volume of a sphere whose radius is 0.63 m.

Q24. Find the amount of water displaced by a solid spherical ball of diameter 28 cm.

Q25. Find the amount of water displaced by a solid spherical ball of diameter 0.21 m.

Q26. The height of a cone is 16 cm and its base radius is 12 cm. Find the curved surface area and the total surface area of the cone (Use π = 3.14)

Q27. A corn cob (see figure), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm If each 1 cm^2 of the surface of the cob carries and average of four grains, find how many grains you would find on the entire cob.

Q28. Find (i) the curved surface area and (ii) the total surface area of a hemisphere of radius 21 cm.

Q29. The hollow sphere, in which the circus motorcyclist performs his stunts, has a diameter of 7 m. Find the area available to the motorcyclist for riding.

Q30. A child playing with building blocks, which are of the shape of cubes, has built a structure as shown in figure. If the edge cube is 3 cm, find the volume of the structure built by the child.

Q31. The height and the slant height of a cone are 21 cm and 28 cm respectively. Find the volume of the cone.

Q32. Monica has a piece of canvas whose area is 551 m^2. She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stiching margins and the wastage incurred while cutting, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.

Q33. A plastic box 1.5 m long, 1.25 m wide and 65 cm deep is to be made. It is to be open at the top. Ignoring the thickness of the plastic sheet, determine:

(i)   The area of the sheet required for making the box.

(ii)   The cost of sheet for it if a sheet measuring 1 m^2 costs Rs. 20.

Q34. A shot-putt is a metallic sphere of radius 4.9 cm. If the density of the metal is 7.8 g per cm^3, find the mass of the shot-putt.

Q35. The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs. 7.50 per m^2.

Q36. The floor of a reactangular hall has a perimeter 250 m. If the cost of painting the four walls at the rate of Rs. 10 per m^2 is Rs. 15,000. Find the height of the hall.

[Hint: Area of the four walls = lateral surface area.]

Q37. The paint in a certain container is sufficient to paint an area equal to 9.375 m^2. How many bricks of dimesnions 22.5 cm × 10 cm × 7.5 cm can be painted out of this container?

Q38. The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2. Find the diameter of the base of the cylinder.

Q39. It is required to make a closed cylindrical tank of height 1 m and base diameter 140 cm from a metal sheet. How many square metres of the sheet are required for the same?

Q40. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2.

Q41. Curved surface area of a right circular cylinder is 4.4 m^2. If the radius of te base of the cylinder is 0.7 m, find its height.

Q42. In a hot water heating system, there is a cylindrical pipe of length 28 m and diameter 5 cm. Find the total radiating surface in the system.

Q43. Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find (i) radius of the base and (ii) total surface area of the cone.

Q44. A hemispherical bowl made of brass has inner diameter 10.5 cm. Find the cost of tin-plating it on the inside at the rate of Rs. 16 per 100 cm^2.

Q45. A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl.

Q46. A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water can it hold? (1 m^3 = 1000 l)

Q47. A cuboidal vessel is 10 m long and 8 m wide. How high must it be made to hold 380 cubic metres of a liquid?

Q48. Find the radius of a sphere whose surface area is 154 cm^2.

Q49. Find the cost of digging a cuboidal pit 8 m long, 6 m broad and 3 m deep at the rate of Rs. 30 per m^3.

Q50. The capacity of a cubiodal tank is 50000 litres of water. Find the breadth of the tank, if its length and depth are respectively 2.5 m and 10 m.

Q51. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20 m × 15 m × 6 m. For how many days will the water of this tank last?

Q52. The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold? (1000 cm^3 = 1l)

Q53. The inner diameter of cylindrical wooden pipe is 24 cm and its outer diameter is 28 cm. The length of the pipe is 35 cm. Find the mass of the pipe, if 1 cm^3 of wood has a mass of 0.6 g.

Q54. If the volume of a right circular cone of height 9 cm is 48 π cm^3, find the diameter of its base.

Q55. The diameter of the moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

Q56. The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is 8.9 g per cm^3?

Q57. How many litres of milk can a hemispherical bowl of diameter 10.5 cm hold?

Q58. A hemispherical tank is made up of an iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used to make the tank.

Q59. A capsule of medicine is in the shape of a sphere of diameter 3.5 mm. How much medicine (in mm^3) is needed to fill this capsule?

Q60. Mary wants to decorate her Christmas tree. She wants to place the tree on a wooden box 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 how many square sheets of paper of side 40 cm would she require?
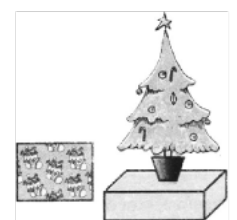
Q61. Savitri had to make a model of a cylindrical kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the kaleidoscope. (see figure). What would be the area of chart paper required by her, if she wanted to make a kaleidoscope of length 25 cm with a 3.5 m radius? (You may take $\pi = \dfrac{22}{7}$).
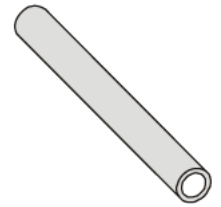
Q62. Hameed has built a cubical water tank with lid for his house, with each outer edge 1.5 m long. He gets the outer surface of the tank excluding the base, covered with square tiles of side 25 cm (see figure). Find how much he would spend for the tiles, if the cost of the tiles is 360 per dozen.
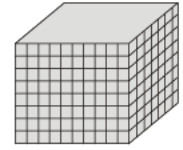
Q63. A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high.

(i)   What is the area of the glass?   (ii)   How much of tape is needed for all the 12 edges?

Q64. A cubical box has each edge 10 cm and another cuboidal box is 12.5 cm long, 10 cm wide and 8 cm high.

(i)   Which box has the greater lateral surface area and by how much?

(ii)   Which box has the smaller total surface area and by how much?

Q65. The pillars of a temple are cylindrically shaped (see figure). If each pillar has a circular base of radius 20 cm and height 10 m, how much concrete mixture would be required to build 14 such pillars?

Q66. A wall of length 10 m was to be built across an open ground. The height of the wall is 4 m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are 24 cm × 12 cm × 8 cm, how many bricks would be required?

Q67. A hemispherical dome of a building needs to be painted (see figure). If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given the cost of painting is Rs. 5 per 100 cm².

Q68. The radius of a spherical balloon increases from 7 cm to 14 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.

Q69. 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.

Q70. 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 m².

Q71. 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 stiching marging and wastage in cutting is approximately 20 cm (Use $\pi = 3.14$)

Q72. 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 m² canvas is Rs. 70.

Q73. In figure, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding if over the top and bottom of the frame. Find how much cloth is required for covering the lampshade.

Q74. A cylindrical pilar is 50 cm in diameter and 3.5 m in height. Find the cost of painting the curved surface of the pillar at the rate of Rs. 12.50 per m².

Q75. A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm (see figure). Find its (i) inner curved surface area, (ii) outer curved surface area, (iii) total surface area.

Q76. A righr circular cylinder juse encloses a sphere of radius r (see figure). Find,

(i)   surface area of the sphere,   (ii)   curved surface area of the cylinder,

(iii)   ratio of the areas obtained in (i) and (ii).
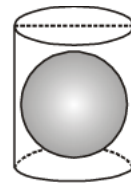
Q77. The diameter of the moon is approximately one fourth of the diameter of the earth. Find the ratio of their surface areas.

Q78. A godown measures 40 m × 25 m × 10 m. Find the maximum number of wooden crates each measuring 1.5 m × 1.25 m × 0.5 m that can be stored in the godown.

Q79. A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

Q80. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?

Q81. If the lateral surface of a cylinder is 94.2 cm^2 and its height is 5 cm, then find (i) radius of its base (ii) its volume. (Use π = 3.14)

Q82. It costs Rs. 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of Rs. 20 per m^2, find (i) inner curved surface area of the vessel, (ii) radius of the base, (iii) capacity of the vessel.

Q83. The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How many square metres of metal sheet would be needed to make it?

Q84. The volume of a right circular cone is 9856 cm^3. If the diameter of the base is 28 cm, find

(i)   height of the cone   (ii)   slant height of the cone   (iii)   curved surface area of the cone

Q85. Find the volume of the right circular cone with

(i)   radius 6 cm, height 7 cm   (ii)   radius 3.5 cm, height 12 cm.

Q86. A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7 cm. If the bowl is filled with soup to a height of 4 cm, how much soup the hospital has to prepare daily to serve 250 patients?

Q87. A right triangle *ABC* with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.

Q88. A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.

Q89. Find the volume of a sphere whose surface area is 154 cm^2.

Q90. A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs. 498.96. If the cost of white-washig is 2.00 per square metre, find the

(i)   inside surface area of the dome   (ii)   volume of the air inside the dome.

Q91.   The diameter of a sphere is decreased by 25%. By what per cent does its curved surface area decrease?

Q92. Twenty seven solid iron spheres, each of radius r and surface area S are melted to form a sphere with surface ares S'. find the

(i)   radius r' of the new sphere   (ii)   ratio of S and S'.

Q93. At a Ramzan Mela, a stall keeper in one of the food stalls has a large cylindrical vessel of base radius 15 cm filled up to a height of 32 cm with orange juice. The juice is filled in small cylindrical glasses (see figure) of radius 3 cm up to a height of 8 cm, and sold for Rs. 3 each. How much money does the stall keeper receive by selling the juice completely?
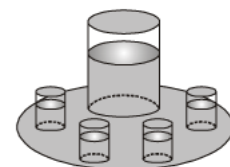
Q94. Shanti Sweets Stall was placing an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required. The bigger of dimensions 25 cm × 20 cm × 5 cm and the smaller of dimensions 15 cm × 12 cm × 5 cm. For all the overaps, 5% of the total surface area is required extra. If the cost of the cardboard is Rs. 4 for 1000 m², find the cost of cardboard required for supplying 250 boxes of each kind.

Q95. Parveen wanted to make a temporary shelter for her car by making a box-like structure with tarpaulin that covers all the four sides and the top of the car (with the front face as a flap which can be rolled up). Assuming that the stitching margins are very small, and therefore negligible, how much tarpaulin would be required to make the shelter of height 2.5 m, with base dimensions 4 m × 3 m?

Q96. The linner diameter of a circular well is 3.5 m. It is 10 m deep. Find

(i)   its inner curved surface area,

(ii)   the cost of plastering this curved surface at the rate of Rs. 40 per m².

Q97. Find:

(i)   the lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high.

(ii)   how much steel was actually used, if $\frac{1}{12}$ of the steel actually used was wasted in making the tank.

Q98.   A wooden book shelf has external dimensions as follows:

   Height = 110 cm, Depth = 25 cm, Breadth = 85 cm (see figure).

The thickness of the plank is 5 cm everywhere. The external faces are to be polished and the inner faces are to be painted. If the rate of polishing is 20 paise per cm² and the rate of painting is 10 paise per cm², find the total expenses required for polishing and painting the surface of the bookshelf.
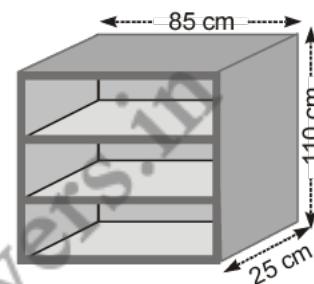
Q99. If the triangle *ABC* in the question 7 above is revolved about the side 5 cm, then find the volume of the solid so obtained. Find also the ratio of the volumes of the two solids obtained in Question 7 and 8.

Q100 A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood and that of the graphite.

Q101 A soft drink is available in two packs – (i) a tin can with a rectangular base of length 5 cm and width 4 cm, having a height of 15 cm and (ii) a plastic cylinder with circular base of diameter 7 cm and height 10 cm. Which container has greater capacity and by how much?

Q102. The front compound wall of a house is decorated by wooden spheres of diameter 21 cm, placed on small supports as shown in figure. Eight such spheres are used for this purpose, and are to be painted silver. Each support is a cylinder of radius 1.5 cm and height 7 cm and is to be painted black. Find the cost of paint required if silver paint cost as 25 paise per cm² and black paint costs 5 paise per cm².

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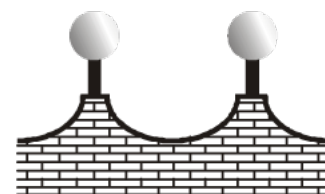
S1. $220 \, cm^2$.

S2. $616 \, cm^2$.

S3. Volume of sphere $= 5887.32 \, cm^3$.

S4. $89.8 \, cm^3$.

S5. $165 \, cm^2$.

S6. $1244.57 \, m^2$.

S7. $942 \, cm^2$.

S8. $180 \, cm^3$.

S9. (i) $1.232 l$. (ii) $\dfrac{11}{35} l$.

S10. $10 \, cm$.

S11. $38.5 \, kl$.

S12. $1386 \, cm^2$.

S13. $394.24 \, cm^2$.

S14. $2464 \, cm^2$.

S15. $616 \, cm^2$.

S16. $1386 \, cm^2$.

S17. $38.5 \, m^2$.

S18. $264 \, cm^3$.

S19. $154 \, cm^3$.

S20. $1.232 l$.

S21. $\dfrac{11}{35} l$.

S22. $1437 \dfrac{1}{3} \, cm^3$.

S23. 1.05 m^3 (approx.)

S24. $11498 \dfrac{2}{3} \text{ cm}^3$.

S25. 0.004851 m^3.

S26. Curved surface area (CSA) = 753.6 cm^2. Total surface area (TSA) = 1205.76 cm^2.

S27. There would be approximately 531 grains of corn on the cob.

S28. (i) the curved surface area = 2772 cm^2.   (ii) total surface area of a hemisphere = 4158 cm^2.

S29. 154 m^2.

S30. Volume of structure = 405 cm^3.

S31. 7546 cm^3.

S32. 1232 m^3.

S33. (i) 5.45 m^2.   (ii) Rs. 109

S34. Mass of the shot putt = 3.85 kg (nearly).

S35. Rs. 555

S36. 6 m.

S37. 100 bricks.

S38. 2 cm.

S39. 7.48 m^2.

S40. 1584 m^2.

S41. 1 m.

S42. 4.4 m^2.

S43. (i) 7 cm.   (ii) 462 cm^2.

S44. Rs. 27.72.

S45. 173.25 cm^2.

S46. 135000 litres.

S47. 4.75 m.

S48. 3.5 cm.

S49. Rs. 4320.

S50. 2 m.

S51. 3 days.

S52. 34.65 litres.

S53. 3.432 kg. [Volume of a pipe = $\pi h \times (R^2 - r^2)$, where R is the outer radius and r is the inner radius].

S54. 8 cm.

S55. $\dfrac{1}{64}$

S56. 345.39 g (approx.)

S57. $0.303\,l$ (approx.)

S58. $0.06348\,\text{m}^3$ (approx.)

S59. $22.46\,\text{mm}^3$ (approx.)

S60. She would require 7 sheets.

S61. Area of chart paper required = $550\,\text{cm}^2$.

S62. He would spend Rs. 5400 for the tiles.

S63. (i) $4250\,\text{cm}^2$ of glass.
  (ii)   320 cm of tape.
    [Calculate the sum of all the edges (the 12 edges consist of 4 lengths, 4 breadths and 4 heights)].

S64. (i)   Lateral surface area of cubical box is greater by $40\,\text{cm}^2$.
  (ii)   Total surface area of cubiodal box is greater by $10\,\text{cm}^2$.

S65. 14 pillars would need $17.6\,\text{m}^3$ of concrete mixture.

S66. 4167 bricks.

S67. Cost of painting the whole dome = Rs. 24,640.

S68. 1 : 4.

S69. $5500\,\text{cm}^2$.

S70. Rs 1155.

S71. 63 m.

S72. (i)   26 m.   (ii)   Rs. 137280.

S73. $2200\,\text{cm}^2$;   Height of the cylinder should be treated as $(30 + 2.5 + 2.5)$ cm.

S74. Rs. 68.75

S75. (i) $968\,\text{cm}^2$.   (ii) $1064.8\,\text{cm}^2$.   (iii) $2038.08\,\text{cm}^2$.
    [Total surface area of a pipe is (inner curved surface area + outer curved surface area + areas of the two bases). Each base is a ring of area given by $\pi (R^2 - r^2)$.]

S76. (i)　$4\pi r^2$.　　　　　(ii)　$4\pi r^2$.　　　　　(ii)　$1:1$

S77. $1:16$.

S78. 10666 crates.

S79. 6 cm,　$4:1$.

S80. 4000 m^3.

S81. (i)　3 cm.　　　　　(ii)　141.3 cm^3.

S82. (i)　110 m^2.　　　　　(ii)　1.75 m.　　　　　(iii)　96.25 kl.

S83. 0.4708 m^2.

S84. (i)　48 cm.　　　　　(ii)　50 cm.　　　　　(iii)　2200 cm^2.

S85. (i)　264 cm^3.　　　　　(ii)　154 cm^3.

S86. 38500 cm^3 or 38.5 l of soup.

S87. 100π cm^3.

S88. 86.625 m^3,　99.825 m^2.

S89. $179\frac{2}{3}$ cm^3.

S90. (i)　249.48 m^2.　　　　　(ii)　523.9 m^3 (approx.)

S91.　43.75%.

S92. (i)　$3r$.　　　　　(ii)　$1:9$.

S93. Rs. 300.

S94. Rs. 2184.

S95. 47 m^2.

S96. (i)　110 m^2.　　　　　(ii)　Rs. 4400

S97. (i)　59.4 m^2.　　　　　(ii)　95.04 m^2.

[Let the actual area of steel used be x m^2. Since $\frac{1}{12}$ of the actual steel used was wasted, the area of steel which has gone into the tank = $\frac{11}{12}$ of x. This means that the actual area of steel used = $\frac{12}{11} \times 87.12$ m^2]

S98.　Rs. 6275.

S99. 240π cm^3;　$5:12$.

S100. Volume of wood = 5.28 cm^3, Volume of graphite = 0.11 cm^3.

S101. The cylinder has the greater capacity by 85 cm^3.

S102.　Rs. 2784.32 (apporx.)

[Remember to subtract the part of the sphere that is resting on the support while calculating the cost of silver paint.]