1. What is the formula for the total surface area of a solid formed by a cylinder with hemispheres on both ends?
   A. $TSA = 2\pi r^2 + 2\pi rh$
   B. $TSA = 4\pi r^2 + 2\pi rh$
   C. $TSA = 3\pi r^2 + 2\pi rh$
   D. $TSA = 2\pi r^2 + \pi rh$
   (B)

   Explanation : The total surface area includes CSA of cylinder and two hemispheres :
   $2\pi rh + 2 \times 2\pi r^2 = 4\pi r^2 + 2\pi rh$.

2. If the base radius of a cone is 3.5 cm and its slant height is 3.7 cm, what is its curved surface area? (Use $\pi = 22/7$)
   A. 44.77 cm²
   B. 40.69 cm²
   C. 41.45 cm²
   D. 42.50 cm²
   (C)

   Explanation : $CSA = \pi rl = (22/7) \times 3.5 \times 3.7 \approx 41.45$ cm².

3. What is the volume of a toy made by joining a cone (h = 2 cm, r = 2 cm) and a hemisphere of same radius?
   A. 18.76 cm³
   B. 21.12 cm³
   C. 25.12 cm³
   D. 28.23 cm³
   (C)

   Explanation : Volume = $(2/3)\pi r^3 + (1/3)\pi r^2 h =$ $(3.14 \times 2^3 \times 1/2) + (3.14 \times 2^2 \times 2/3) = 25.12$ cm³.

4. A test tube is shaped like a cylinder with a hemisphere at one end. What is its surface area formula?
   A. $2\pi r^2 + 2\pi rh$
   B. $\pi r^2 + 2\pi rh$
   C. $3\pi r^2 + 2\pi rh$
   D. $3\pi r^2 + \pi rh$
   (C)

   Explanation : Surface area includes CSA of cylinder + CSA of hemisphere + base of cylinder = $2\pi rh + 2\pi r^2 + \pi r^2 = 3\pi r^2 + 2\pi rh$.

5. What is the actual capacity of a cylindrical glass with a hemispherical base (r = 2.5 cm, h = 10 cm)?
   A. 163.54 cm³
   B. 165.25 cm³
   C. 168.90 cm³
   D. 172.40 cm³
   (A)

   Explanation : Actual capacity = Volume of cylinder − Volume of hemisphere = 196.25 − 32.71 = 163.54 cm³.

6. If a cube of side 5 cm is attached with a hemisphere of diameter 4.2 cm, what is the total surface area?
   A. 163.86 cm²
   B. 154.00 cm²
   C. 170.25 cm²
   D. 160.00 cm²
   (A)

   Explanation : Surface area = TSA of cube − base area of hemisphere + CSA of hemisphere = 150 + $\pi r^2 \approx$ 163.86 cm².

7. What is the cost of canvas required for a tent with cylindrical base and conical top (Canvas rate = ₹500/m²)?
   A. ₹12566
   B. ₹14150
   C. ₹15700
   D. ₹17225
   (C)

   Explanation : Area = CSA of cone + CSA of cylinder = 31.36 m²; Cost = 31.36 × 500 = ₹15700.

8. What is the surface area of a capsule with cylindrical middle and hemispherical ends (l = 14 mm, d = 5 mm)?
   A. 236.57 mm²
   B. 275.71 mm²
   C. 264.32 mm²
   D. 241.35 mm²
   (B)

   Explanation : $CSA = 2\pi rh + 2 \times 2\pi r^2 = 2\pi(2.5)(9) +$ $4\pi(2.5^2) = 275.71$ mm².

9. How much air is left in a shed (volume = 1128.75 m³) after machinery (300 m³) and 20 workers (0.08 m³ each)?
   A. 828.75 m³
   B. 827.15 m³
   C. 826.00 m³
   D. 825.45 m³
   (B)

   Explanation : Occupied space = 300 + 1.6 = 301.6; Remaining = 1128.75 − 301.6 = 827.15 m³.

10. What is the volume difference between a cylinder and a toy made of cone + hemisphere (r = 2 cm, h = 4 cm)?
    A. 25.12 cm³
    B. 20.00 cm³
    C. 30.00 cm³
    D. 15.00 cm³
    (A)

    Explanation : Toy volume = 25.12 cm³, Cylinder volume = 3.14×4×4 = 50.24; Difference = 50.24 − 25.12 = 25.12 cm³.