1. The volume of the greatest sphere that can be cut off from a cylindrical log of wood with a base radius of 1 cm and height 5 cm is:

   A. $\frac{4}{3}\pi$ cm^3 B. $\frac{10}{3}\pi$cm^3

   C. 5π cm^3 D. $\frac{20}{3}\pi$cm^3 (A)

Explanation : The greatest sphere that can be cut off from the cylinder will have a diameter equal to the height of the cylinder. The volume of the sphere is $\frac{4}{3}\pi r^3$

2. Volume ratio of two spheres 8:27. Surface area ratio is:

   A. 2:3 B. 4:27

   C. 8:9 D. 4:9 (D)

Explanation: Surface area ratio = Square of volume ratio's cube root: 4 : 9.

3. A solid toy with a hemisphere and cone has a volume of:

   A. 25.12 cm^3 B. 35.12 cm^3

   C. 45.12 cm^3 D. 55.12 cm^3 (A)

Explanation: Volume = Volume of hemisphere + cone.

4. Difference in volumes of a cylinder and toy (hemisphere + cone) is:

   A. 20 cm^3 B. 25 cm^3

   C. 30 cm^3 D. 35 cm^3 (B)

Explanation: Volume difference = Cylinder volume - Toy volume.

5. Apparent and actual capacity of a glass (diameter 5 cm, height 10 cm):

   A. 196.25 cm^3 , 163.54 cm^3

   B. 160.25 cm^3 , 180.54 cm^3

   C. 190.25 cm^3 , 150.54 cm^3

   D. 200.25 cm^3 , 160.54 cm^3 (A)

Explanation : Apparent = cylindrical part volume, Actual = apparent - hemispherical portion volume.

6. Volume of a hemisphere with radius 3 cm:

   A. 36π cm^3

   B. 18π cm^3

   C. 12π cm^3

   D. 24π cm^3 (B)

Explanation : Volume = $2/3\pi r^3$ = 18π cm^3.

7. Volume of a cone with radius 4 cm and height 9 cm:

   A. 48π cm^3

   B. 50π cm^3

   C. 55π cm^3

   D. 60π cm^3 (A)

Explanation : Volume = $1/3\pi r^2 h$ = 48π cm^3.

8. A cone surmounted by a hemisphere has a total volume of:

   A. 432 cm^3

   B. 450 cm^3

   C. 468 cm^3

   D. 490 cm^3 (A)

Explanation : Total volume = Cone volume + Hemisphere volume.

9. Volume of a cylindrical glass with hemispherical bottom:

   A. 196.25 cm^3

   B. 225.15 cm^3

   C. 240.5 cm^3

   D. 255.5 cm^3 (A)

Explanation : Apparent capacity is the volume of the cylindrical portion.

10. Volume of a sphere with radius 7 cm:

    A. 100π cm^3

    B. 110π cm^3

    C. 115π cm^3

    D. 125π cm^3 (D)

Explanation : Volume = $4/3\pi r^3$ = 125π cm^3.