TB(2B) Ch. 12 Areas and Volumes (II)
## Conventional Questions

1. **[16-17 Final Exam #12]**

    Figure 4 shows a slice of a cake in shape of a prism with sector *OAB* as its uniform cross-section. It is known that the angle at centre *O* is 45° and the radius of the sector is 8 cm. If the volume of the cake is 80π cm^3,

    (a) find the height of the cake.   **(2 marks)**
    (b) The slice of the cake is then cut into two equal parts such that the angle at centre of each section becomes 22.5°. Find the total surface area of the two smaller slices of the cake, including their bases.   **(2 marks)**
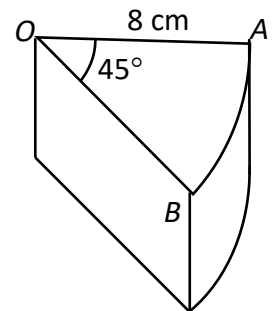
Figure 4

2. **[18-19 Final Exam #12]**

    The base area of a cylindrical tank is 49π cm^2. It is given that the height of the tank is the same as the diameter of the base.

    (a) Find the curved surface area of the cylinder in terms of π.   **(3 marks)**

    (b) The tank is now filled up with some water. If 8 identical cubes with length $\sqrt{2}k$ cm are added and totally submerged in it, the rise in the water level will be *k* cm without water overflow. Find the value of *k*.   **(2 marks)**

3. **[20-21 Standardized Test #3]**

    A 10π cm wire is bent into a circle. Find the area of the circle formed. (Express your answer in terms of π.)   **(3 marks)**

4.   **[20-21 Final Exam #11]**

Find the perimeter of the sector *OAPB* with centre *O* in **Figure 4**. Give your answer in 3 significant figures.   **(3 marks)**
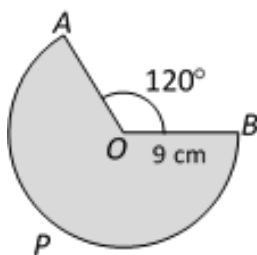

Figure 4

5.   **[20-21 Final Exam #21]**

In **Figure 10a**, three circles centered at *A*, *B* and *C* and of radii 12 cm, 4 cm and 8 cm respectively touch each other at *P*, *Q* and *R*.

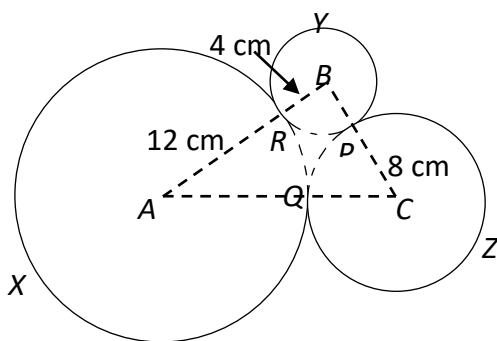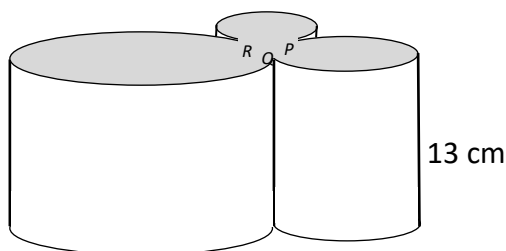**Figure 10a**   **Figure 10b**

(a)   Show that $\angle ABC = 90°$.   **(2 marks)**

(b)   The arcs $\overset{\frown}{RXQ}$, $\overset{\frown}{QZP}$ and $\overset{\frown}{PYR}$ were combined to form the boundaries of the base of a rubber prism with height 13 cm as shown in **Figure 10b**.

(i)   Find the perimeter of the base of the rubber.   **(3 marks)**

(ii)   Peter claims that the total surface area of the rubber exceeds 0.3 m^2. Do you agree? Explain your answer.   **(2 marks)**

~ End ~