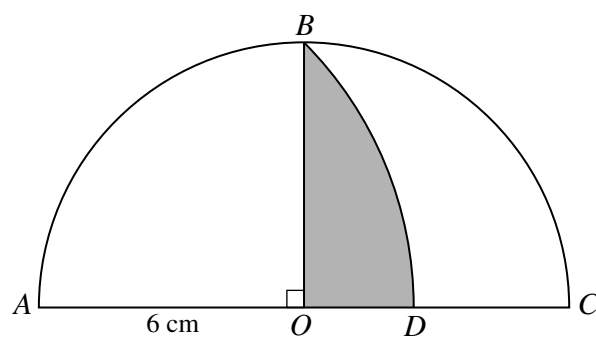**5**

The diagram shows a semicircle *ABC* with centre *O* and radius 6 cm. The point *B* is such that angle *BOA* is 90° and *BD* is an arc of a circle with centre *A*. Find

  (i) the length of the arc *BD*, [4]

  (ii) the area of the shaded region. [3]