

**14** Satellites A and B of masses  $m$  and  $2m$  are placed in geostationary orbits of radii  $r_A$  and  $r_B$  about the Earth, where the radii are measured from the centre of the Earth to the respective satellites. Which of the following statements is correct?

- A** The radii  $r_A$  and  $r_B$  are the same.
- B** Both satellites have the same centripetal force.
- C** Both satellites have the same total energy.
- D** Both satellites have the same gravitational force.

**15** The escape speed of an oxygen molecule at the Earth's surface is  $1.1 \times 10^4 \text{ m s}^{-1}$ . What is the