10 Taking the Earth to be a perfect sphere of uniform density rotating about its polar axis, which of the following statements concerning the observed acceleration due to free fall a at the surface of the Earth is true?

A The value of a at the equator is larger than that at the poles.

B If the rate of rotation of the Earth decreases, the value of a at the equator increases.

C If the radius of the Earth increases with its density remaining unchanged, the value of a at the poles decreases.

D If the radius of the Earth increases with its density remaining unchanged, the value of a at the equator decreases.