

## Answers to selected questions

### Chapter 5

- Q6** Path 3, in the direction of the tangent to point A. Neglecting gravity, the body would move in the direction it was moving when the force disappeared, in accordance with the first law.
- Q12** For a body in a vertical circle there will be two contributions to the force acting on a body: its weight plus the tension in the string. The vector sum of these forces must equal the mass times the constant value of the centripetal acceleration. At the lowest point the tension is the greatest and equals the sum of the weight plus the mass times acceleration.
- Q18** In Ptolemy's view, everything revolved about the Earth. The Earth was stationary and the sun and stars revolved about it, as well as the planets in their epicycles.
- Q30** New moon occurs when the moon passes between the Earth and the sun. Thus the side of the moon facing us is not illuminated (except possibly by earthshine—the light originating from Earth being reflected by the moon).
- Q36** No. The phenomenon of tides comes about because of the difference between the force acting on the water at the surface **and** the force acting on the center of the rigid Earth.