Question 1

6. Compare vector and scalar quantities.
Give one example of each. (8)

Describe an experiment to find the resultant of two vectors. (9)

A golfer pulls his trolley and bag along a level path. He applies a force of 277 N at an angle of 24.53° to the horizontal. The weight of the trolley and bag together is 115 N and the force of friction is 252 N.

Calculate the net force acting on the trolley and bag. (9)

What does the net force tell you about the golfer's motion? (3)

Use Newton's second law of motion to derive an equation relating force, mass and acceleration. (9)

A force of 5.3 kN is applied to a golf ball by a club. The mass of the ball is 45 g and the ball and club are in contact for 0.54 ms.

Calculate the speed of the ball as it leaves the club. (9)

The ball leaves the club head at an angle of 15° to the horizontal. Calculate the maximum height reached by the ball. Ignore the effect of air resistance. (9)

(acceleration due to gravity, $g = 9.8\ \text{m s}^{-2}$)