PART A MULTIPLE CHOICE

QUESTION A1

A bird flies 6.0 km due east and then 6.0 km due north in 1 hour. What is the bird's average velocity?

a) 12 km/h N

b) 6 km/h E

c) 8.5 km/h NE

d) 8.5 km/h N

QUESTION A2

A runner accelerates from rest to about 10 m/s in 5.0 seconds. What is the acceleration of the sprinter?

a) 2.0 ms^{-2}

b) 2.4 ms^{-2}

c) 10.0 ms^{-2}

d) 5.0 ms^{-2}

QUESTION A3

The correct standard notation for the number 123.45 is:

a) 1.2345×10^{2}

b) 12.345×10^{1}

c) 123.45×10^{-2}

d) None of the above

PART B SHORT ANSWER

B1. a) What is the distance travelled in A1?

b) What is the displacement?

B2. A cyclist accelerates constantly from rest and reaches a velocity of 10m/s after 10 seconds, then travels at constant speed for 100 seconds, and then decelerates (constantly) to a stop in 5 seconds. draw a velocity-time graph

a) Sketch a velocity-time graph

b) what is the total distance travelled?

c) what is the acceleration at take-off?

B3. Two children fight over a 0.5-kg toy. Child1 pulls to the right with a force of 200 N, and child 2 pulls to the left with a force of 195 N. No other forces are involved. Determine the magnitude and direction of the toy's resulting acceleration.

B4. A 3-kg fish can accelerate from rest to 7 m/s in 2.0 seconds.

a. Determine the acceleration
b. What is the net force?