**MOMENTUM**

1. State all three of Newton's laws of motion.

2. Give an example, in each case, of two situations where there are two equal and oppositely directed forces that are: (a) a Newton’s 3rd law pair; (a) NOT a Newton’s 3rd law pair.

3. Define: (a) momentum; (b) impulse

4. How can impulse be found a force-time graph?

5. Explain how the crumple zones of a car can reduce the injury to the passengers of a car. You should refer to the relationship between force and momentum in your answer.

6. A truck of mass 2000kg collides with another stationary truck of mass 3000kg. If after the collision both trucks move of together with a speed of 5m/s what was the initial speed of the first truck?

7. (a) What is meant by an elastic collision?

(b) Show that the collision in the Q6 above is ineleastic.

8. Show how Newton's second law of motion leads to the equation F = ma for a body of constant mass m.

9. Calculate the recoil speed of a gun mass 2kg when firing a bullet of mass 50g at a speed of 200ms-1.