NAME

## Year 11 Physics Assignment Work, Energy and Momentum 2

- 1. An astronaut (mass 90 kg) is standing on the outside of a stationary spacecraft (of mass 1600 kg). If the astronaut pushes off from the spacecraft with a force of 150N for 1.02 seconds: 13
  - a) Calculate the final momentum of the astronaut
  - b) State the final momentum of the spacecraft
  - c) Calculate the final speed of the astronaut
  - d) Calculate the final speed of the spacecraft
- 2. Calculate the change in total kinetic energy for questions 4 and 5 in assignment 1 and conclude which (if any) are elastic collisions. /5
- 3. An explosive with no initial speed breaks apart as shown below (B and C leave at right angles to each other.  $m_A = 2.5 \text{ kg}$   $v_A = ?$   $m_B = 1 \text{ kg}$   $v_B = 4 \text{ ms}^{-1}$

 $m_c = 0.5 \text{ kg}$ 

 $v_c = 6 \text{ ms}^{-1}$ 

Determine the speed of fragment A.





13

/1

12

12

13

TOTAL /19