**The National Orthodox School /Shmaisani**

**Subject: Physics Title: Newton's 2nd law homework**

**Name: Grade-Section: 9IB Mark: \_\_\_/8**

A car which has run out of petrol is being towed by a breakdown truck along a straight horizontal road. The truck has mass 1200 kg and the car has mass 800 kg. The truck is connected to the car by a horizontal rope. The truck’s engine provides a constant driving force of 2400N. The resistances to motion of the truck and the car are modeled as constant and of magnitude 600 N and 400 N respectively.

1. Draw the free body diagram of the **truck**. (1 mark)
2. Draw the free body diagram of the **car**. (1 mark)
3. Find the acceleration of the truck and the car. (3 marks)
4. Find the tension in the rope. (3 marks)