1 : a) A 5kg mass is raised 10m. Calculate the potential energy it has when it reaches the maximum height.

b) If the mass is dropped what speed will it reach. Assume all potential energy is converted to kinetic energy.

6 Marks

2 : a) A motor is supplied with electricity from a 6V supply. If it draws a current of 50mA calculate the energy supplied if the motor is on for 5 minutes.

b) If the motor drives a winch that raises a 100N load calculate how high it will be raised.

6 Marks

3 : A heating element in a kettle draws 2A from the mains supply. If there are 2 litres of water at 20°C in the kettle and it is 35% efficient calculate the time required to boil the water. (Specific heat capacity of water is 4200J/kgK.)

Total mark   /20