**16** The force resisting the motion of a car is taken as being proportional to the square of the car's speed. The magnitude of the force at a speed of $20\,m\,s^{-1}$ is 800 N.

What effective power is required from the car's engine to maintain a steady speed of $40\,m\,s^{-1}$?

**A** 32 kW **B** 64 kW **C** 128 kW **D** 512 kW

**17** A concrete cube of side 0.60 m and uniform density $2.0 \times 10^3\,kg\,m^{-3}$ is lifted 5.0 m vertically by a crane.

What is the change in potential energy of the cube?

**A** 2.2 kJ **B** 21 kJ **C** 59 kJ **D** 450 kJ

**18** What is the internal energy of an object?

**A** It is the energy associated with the object's movement through space.

**B** It is the energy associated with the random movement of the molecules in the object.

**C** It is the energy due to the attractions between the molecules in the object.

**D** It is the sum of all the microscopic potential and kinetic energies of the molecules in the object.

**Space for working**