Ans

P1

1	2	3	4	5	6	7	8	9	10
D	A	C	D	D	C	A	C	A	D
11	12	13	14	15	16	17	18	19	20
C	D	A	A	C	A	A	A	B	A

P2

Section A

1 a) Weight is a vector quantity whereas mass is a scalar quantity.

OR any relevant answers

b) Density = mass/volume,

volume = mass/density = 0.65/780 = 0.0008 m^3

2 a) 0 – 6 s : uniform acceleration

6 – 12 s = constant velocity/speed

b) acceleration = 22/6 = 3.67 m/s^2

c) F = ma, m = F/a = 1800/3.67 = 490 N

d) air resistance/friction

3 a) chemical potential store

b) The chemical potential store in the battery is transferred electrically to the motor. Energy is transferred mechanically by a force (motor) to become kinetic energy.

c) KE = ½ mv^2

KE = ½ x 70 x 4^2 = 560 J

4 a) i) conduction

ii) convection

b) As the water at the bottom is heated up by the fire, it expands, becomes less dense and rises. The cooler water which is denser will sink and replace the heated water. A convection current is set up.

c) When the temperature rises, the particles will gain in kinetic energy. They move further from one another.

5 a) It is an imaginary line that join all the points that are in phase.

b) decreases, decreases

Section B

6 a) i) $A_2 = 0.25$ A $A_3 = 0.25$ A $V_2 = 9.0$ V

ii) $R = V/I = 9/0.25 = 36$ ohm

iii) $P = VI = 3 \times 0.25 = 0.75$ W

b) i) 0 A

ii) When the metal casing becomes live due to the fault, a large current will pass through the live wire and melt the fuse.

iii) Beside cutting off the current supply, it can also cut off the high voltage supply in the live wire.

7 a)

name of particle	number of particles	relative charge of particle
electron	6	-1
neutron	8	0
proton	6	+1

b) i) 2 half-lives

ii) 5700 x 2 = 11400 years

c) an electron.

d) To reduce the exposure time.