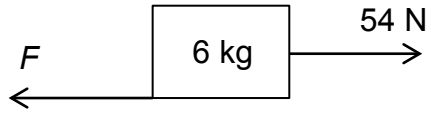
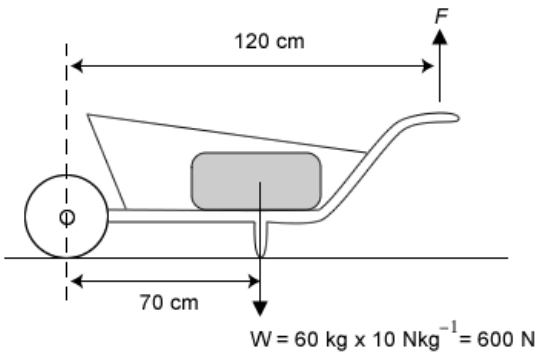
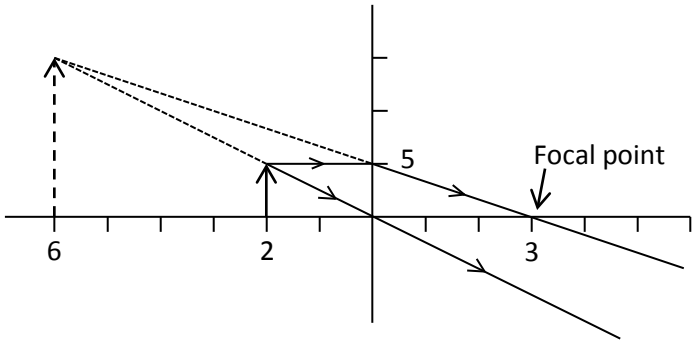
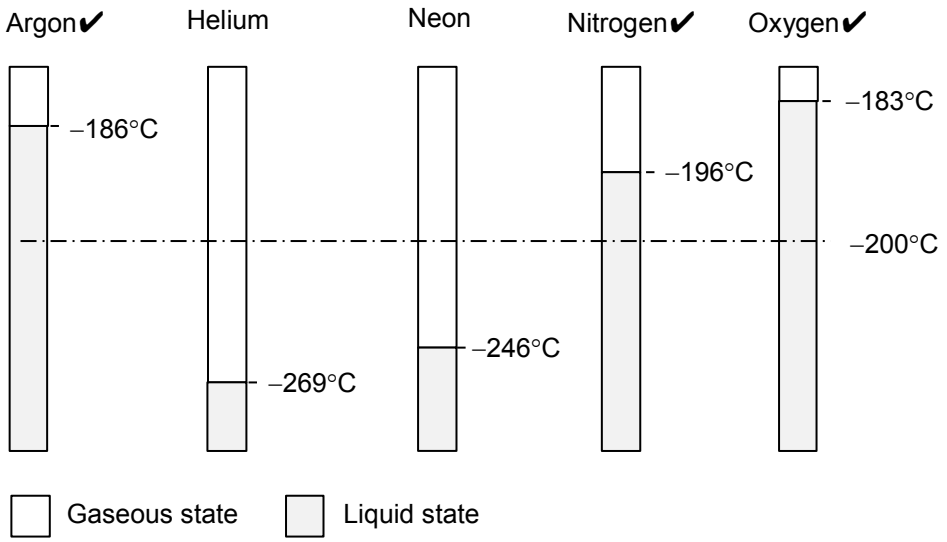
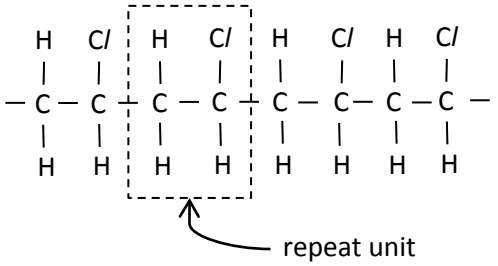
#	Ans	Workings/Remarks
PHYSICS		
1	A	Mass has only magnitude but does not have direction. The units of mas is in kilogram
2	C	Acceleration is defined as the rate of change of velocity. The word "increasing" suggests that it is non-uniform.
3	B	Resultant force = 6 kg × 6 m/s^2 = 36 N  54 N – F = 36 N F = 18 N
4	B	The definition of gravitational field is a region of space in which an object experiences a force because of its mass.
5	A	$\text{Density} = \frac{\text{mass}}{\text{volume}}$ $\therefore \text{Volume} = \frac{\text{mass}}{\text{density}}$ $\text{L} \times \text{B} \times \text{H} = \frac{\text{mass}}{\text{density}}$ 2 cm ×15 cm × L cm = 6000 g / 1.6 g cm^{-1} ∴ L = 125 cm
6	A	Taking moments about the pivot, 600 N × 70 cm = F × 120 cm F = 350 N 
7	B	Overall energy change is from chemical potential energy (stored in the chemicals in the battery) to the gravitational potential energy in the wood's rise in height.
8	A	$\text{Power} = \frac{\text{work done}}{\text{time taken}}$ $= \frac{\text{force} \times \text{distance (in direction of the force)}}{\text{time taken}}$ = (300 N × 3 m) / 20 s = 45 W
9	D	Evaporation is the process where more energetic particles leave the surface of the liquid, leaving the less energetic molecules behind.
10	B	The definition of frequency is the number of waves passing a point per second.

11	C	$v = f\lambda$ $= 2.5\ \text{Hz} \times 0.6\ \text{m}$ $= 1.5\ \text{m s}^{-1}$ But $v = \frac{d}{t}$ $1.5\ \text{m s}^{-1} = \frac{3\ \text{m}}{t}$ $t = 2\ \text{s}$
12	B	
13	D	As the girl moves closer to the wall, the distance between the wall and her decreases, and since the sound and echo travel over lesser distance, the time taken is lesser. The intensity of the sound decreases with increasing distance travels due to energy loss, and hence the echo is louder.
14	C	Field lines point outward from positive charges and point inward to negative charges.
15	D	$Q = It$ $= 10 \times 5 \times 60\text{s}$ $= 3000\ \text{C}$
16	C	$R = \rho L / A$ With double the length, the resistance also doubles, $\therefore R = 4\ \Omega$ With double the resistance, the current in the wire will halve, $\therefore I = 1.5\ \text{A}$
17	C	By conservtion of current, $I_1 = I_4 = I_2 + I_3$ Total voltage of the circuit, $V = V_1 + V_2$
18	A	Since the 10 Ω resistor is double the resistance than the 5Ω resistor, the current in the 10Ω resistor is half that of the 5 Ω resistor, hence: Current in the 10 Ω resistor = 4A ; Current in the 5 Ω resistor = 8A
19	D	Energy = Power × time = 60 W × 1 min × 60 sec = 3600 J
20	D	The Right-Hand Grip rule determines the direction of the current. Magnetic field lines move further apart away from the wire since the magnetic field strength will weaken with distance from the wire.

CHEMISTRY

21	D	Positive cation test shows zinc ion Negative anion test shows sulfate ion.
22	B	
23	A	The proton number, which is 2, gives the number of protons, and this is the same as the number of electrons in a neutral atom.
24	B	YCl forms ions Y^+ and Cl^- Hence Y must come from Group I, and have 1 electron in its valence shell.
25	A	H – N – H I H
26	B	Since the ratio of volumes is the same as the ration of the number of moles, $20cm^3$ of CO will produce $20cm^3$ of oxygen
27	D	Mass= mol × M_r = 1 mol × (23+16+1) g mol^{-1} = 40g
28	A	Combustion of petrol gives out heat energy and is therefore exothermic
29	C	Since the marble chips completely react, the amount of acid used does not affect the end point of the curve. A concentrated solution in experiment 2 will give a steeper gradient than in Experiment 1.
30	C	The oxidising agent will cause KI (colorless) to oxidise to I_2 (brown).
31	D	Titration involves both acid and alkali and both must be soluble
32	C	Descending Group I, the melting point decreases, so m.p of Y is less than that of V.
33	C	Out of the four metals, Magnesium is the most reactive, and will produce the most number of bubbles in the test tube.
34	D	Limestone removes SiO_2, which is an acidic oxide.

35	A	CO is a colorless gas that is formed from the incomplete combustion of fossil fuels. It combines with haemoglobin in the blood to form a stable compound.
36	D	Diesel is for lorries and trucks, Gasoline for cars, Kerosene is the fuel for jet engines.
37	B	$C_nH2_{n+2}$is the general formula of alkanes, in which only C_6H_{14} fits.
38	B	
39	A	A C=C bond in the structure of A allows it to decolorize bromine.
40	C	Alcohols undergo oxidation to form Carboxylic Acids. Since propanoic acid is formed, the starting alcohol must have 3 carbons too, hence propanol