Compiled by
Joss Sticks
www.exampaper.com.sg

#	Ans	Workings/Remarks
PHYSICS		
1	C	$2.30 + 0.03 = 2.33$
2	D	Gradient of Distance – Time graph = Speed At Z, gradient is zero, implying speed is zero.
3	C	Gradient of Speed – Time graph = Acceleration (Rate of change of velocity) From $t = 20$s to $t = 40$s, gradient is zero, implying acceleration is zero (steady speed) Area under Speed – Time graph = Distance travelled From $t = 20$s to $t = 40$s, distance travelled $= (40-20) \times 10 = 200$ m
4	C	Using Newton's second law, resultant force (F) is directly proportional to acceleration. Greatest F would give greatest acceleration. A: $F = 80 + 20 = 100$ N B: $F = 80 - 20 = 60$ N C: $F = 80 + 40 = 120$ N D: $F = 80 - 40 = 40$ N
5	D	Sum of clockwise moments = Sum of anticlockwise moments $F \times 0.05 = 20 \times 0.40$ $F = 160$ N
6	D	Work done $= 20000$ N $\times 5000$ m $= 100000$ kJ
7	B	Increase in average speed implies increase in average kinetic energy, which in turns implies increase in temperature. Therefore, there is no change in state. [Option A is eliminated]
8	A	Dull black surface is good radiator of heat.
9	D	$v = f\lambda$ $f = (3 \times 10^8) /(1 \times 10^{-10})$ $= 3.0 \times 10^8$ Hz
10	B	Radio wave is electromagnetic wave, which is transverse wave.
11	D	Total distance = distance of chart image from mirror + distance of patient from mirror $= 5 + 2$ $= 7$ m
12	A	
13	D	Amplitude of wave determines loudness of sound. Larger amplitude gives louder sound.
14	D	$P = IV$ $I = \frac{48}{12}$ $= 4$ A $Q = It$ $= 4 \times 2$ $= 8$ C

15	B	M at X, $$V = IR$$ $$= 0.6 \times 10$$ $$= 6 \text{ V}$$ M at Y, $$I = \frac{6}{(10+20)}$$ $$= 0.2 \text{ A}$$
16	B	Voltmeter has to be connected in parallel and ammeter in series with lamp.
17	C	Lowest resistance draws the greatest current from the cell, causing the cell to lose its energy the fastest.
18	C	$$P = IV$$ $$I = 12000000 \text{ W} / 240000 \text{V}$$ $$= 50 \text{ A}$$
19	D	Compass needle follows direction of magnetic field lines as shown.
20	A	Fleming's left hand rule
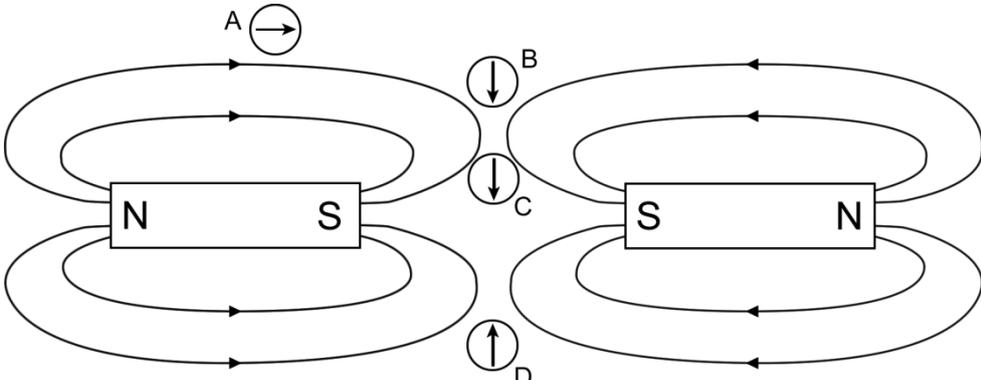
CHEMISTRY

21	D	A: To measure rate of reaction, time taken is required. B: Amount of CO_2 produced is required to follow the reaction. C: Measuring cylinder is needed to measure a fixed volume of hydrochloric acid D: Overall, there is no change in heat energy.
22	D	Al^{3+} and Zn^{2+} react with NaOH to form $Al(OH)_3$ and $Zn(OH)_2$ (white ppt), which are soluble in excess of NaOH. However, to be able to react with an acid (HNO_3), X has to be a carbonate, but not a sulphate.
23	B	Ions are formed by atom losing or gaining electrons to achieve the stable noble gas electronic configuration.
24	D	Metallic bonding is found in metal. Transfer of electrons occurs in ionic bonding.

For tuition, exam papers & Last-Minute Buddha Foot Hugging Syndrome treatment
+65 93805290 / missloi@exampaper.com.sg facebook.com/JossSticksTuition
www.exampaper.com.sg twitter.com/MissLoi

Unauthorized copying, resale or distribution prohibited.
Copyright © 2008 φ exampaper.com.sg. All rights reserved.

2 / 3

25	B	$Mg + 2HCl \rightarrow MgCl_2 + H_2$ No. of mole of Mg $= \frac{6}{24} = 0.25$ No. of mole of $H_2 = 0.25$ Volume of $H_2 = 0.25 \times 24$ $= 6 \ dm^3$
26	A	No. of mole of $Li^+ = \frac{20}{1000} \times 1.0 = 0.02$ No. of mole of $SO_4^{2-} = \frac{40}{1000} \times 0.25 = 0.01$ Ratio of $Li^+ : SO_4^{2-} = 0.02 : 0.01 = 2 : 1$
27	A	B: Breaking of C-H bond requires energy C: Changing of liquid into gas requires energy D: Combustion releases energy
28	D	Largest concentration and highest temperature results in fastest rate of reaction.
29	C	Potassium iodide is a reducing agent because oxidation state of I increases from -1 in iodide ion to 0 in iodine molecule. $2I^- \rightarrow I_2 + 2e^-$ [oxidation] Potassium dichromate (VI) is an oxidizing agent because oxidation state of Cr decreases from +6 (orange) in $Cr_2O_7^{2-}$ to +3 (green) in Cr_2O_3. [Reduction]
30	A	Carbon dioxide is an acidic oxide, which dissolves in water to give carbonic acid.
31	C	3 chemical reactions characteristic of acid are: Acid + metal (e.g. magnesium) Acid + base (e.g. magnesium oxide) Acid + carbonate (e.g. magnesium carbonate)
32	D	Refer to periodic table Group V
33	A	Reactivity of Group I elements increases down the group. Group I elements react by losing their valence electron. As the size of atom increases, valence electron is getting further away from nucleus, diminishing the attractive force of nucleus on valence electron. Therefore, going down Group I, ease of losing the valence electron increases and reactivity increases.
34	A	Copper does not react with acid because it is below hydrogen in the metal reactivity series. Magnesium is above zinc in the metal reactivity series. Therefore, Mg produces more bubbles than Zn in the reaction with acid.
35	D	
36	C	Nitrogen ~ 79% Oxygen ~ 20% Noble Gases ~ 1%
37	D	
38	B	Addition reaction of alkene (vegetable oils) with hydrogen gives alkane (margarine).
39	D	Oxidation of alcohol (e.g. propanol) gives carboxylic acid (e.g. propanoic acid)
40	B	