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Paper 3 Core Theory

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MARK SCHEME

Maximum Mark: 80

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This document consists of **10** printed pages.



Question	Answer	Marks
1(a)	xylem ; mesophyll cells ; stomata ;	3
1(b)	any two from photosynthesis ; transport of ions ; support / turgor ; AVP ;	max 2
1(c)	ions / named ion ; soluble nutrients / named soluble nutrient ; hormones / named hormone ; carbon dioxide ; AVP ;	max 2
1(d)(i)	transport of oxygen ;	1
1(d)(ii)	to replace iron lost during menstruation / period ;	1
1(d)(iii)	feeling tired / dizzy ;	1

Question	Answer	Marks
2(a)(i)	Any two from electrical conductor ; thermal / heat conductor ; malleable ; ductile ; sonorous ;	max 2
2(a)(ii)	high density / high melting point / coloured compounds ;	1
2(b)(i)	(iron) + sulfuric acid → iron sulfate + hydrogen ;	1
2(b)(ii)	(anion) chloride ; (acid) hydrochloric (acid) ;	2
2(c)	number of protons in an atom / nucleus ;	1

Question	Answer	Marks							
3(a)	(Q =) friction / (water) resistance ; (R =) gravitational force / weight ;	2							
3(b)	(forces P and R) equal / balanced ;	1							
3(c)(i)	P / uplift ;	1							
3(c)(ii)	<table border="1"><tr><td>gamma</td><td></td><td></td><td>visible light</td><td></td><td>micro-waves</td><td>radio waves ;</td></tr></table>	gamma			visible light		micro-waves	radio waves ;	1
gamma			visible light		micro-waves	radio waves ;			
3(c)(iii)	sound ;	1							
3(d)	nuclear / batteries ;	1							
3(e)	either 30 km = 30 000 m or 1 hour = 3600 s ; (30 000 / 3600) = 8.3 m/s ;	2							

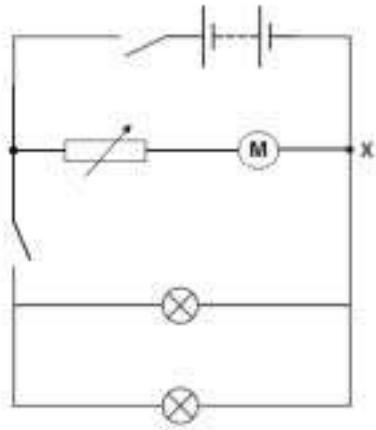
Question	Answer	Marks
4(a)	A oesophagus ; B colon / large intestine ;	2
4(b)(i)	stomach ; any two from stomach has acidic conditions ; pH 2 is acidic ; enzyme only worked in tube 1 / tube 1 was acidic / at the optimum pH ;	max 3
4(b)(ii)	enzyme will become inactive / destroyed at this temperature ;	1
4(b)(iii)	large / protein molecules are broken down ; by the action of an enzyme / acid ;	2
4(b)(iv)	chewing food (in mouth) ;	1

Question	Answer	Marks
5(a)(i)	distillation ;	1
5(a)(ii)	decrease ;	1
5(b)	(filtration) remove (named) solids ; (chlorination) kill microbes / bacteria / sterilizes ;	2
5(c)(i)	(refinery gas) bottled gas / heating / cooking ; (gas oil) diesel fuel / diesel engines / diesel vehicles ;	2
5(c)(ii)	compound / molecule containing hydrogen and carbon ; only (C and H);	2
5(d)(i)	A F ;	1
5(d)(ii)	B ;	1

Question	Answer	Marks
6(a)	temperature at which a solid changes to a liquid <i>owtte</i>	1
6(b)(i)	conduction and convection ;	1
6(b)(ii)	(reduces convection) as no (gas) circulation (possible) <i>owtte</i> ; (reduces conduction) as foam is a bad conductor <i>owtte</i> ;	2
6(c)	infra-red	1
6(d)	$d = m/V = (1900/2000)$; $= 0.95 (\text{g/cm}^3)$;	2

Question	Answer	Marks
7(a)	transpiration ;	1
7(b)(i)	<u>carbon dioxide</u> from the air ; is used in photosynthesis / reacts with water ;	2
7(b)(ii)	by respiration ; carbon dioxide released ;	2
7(c)	<i>rainfall reduced (no mark)</i> less water being transpired / evaporated from trees ;	1
7(d)	soil easily eroded ; due to lack of tree roots ;	2

Question	Answer	Marks
8(a)(i)	(left) cathode ; (right) anode ;	2
8(a)(ii)	orange / brown gas ;	1
8(b)	(reduced) oxygen is removed ;	1
8(c)	K Ca Mg Cu ;;	2
8(d)(i)	any two from heat / increase temperature ; increase surface area of magnesium ; increase concentration of acid ; use / add a catalyst ;	2
8(d)(ii)	magnesium chloride ;	1
8(d)(iii)	filter / filtration ;	1

Question	Answer	Marks
9(a)	 motor in parallel with headlamps ; variable resistor in motor branch, correct symbol ; switch for headlamps after motor branch, before first headlamp branch ; all wires required for complete circuit ;	4
9(b)	(decreasing resistance) increases current (so faster motor) ;	1
9(c)	in parallel ; the same as ; less than ;	3
9(d)	rain / water / damaged insulation / AVP ; protect from rain or water / use of protective cover / sensible suggestion related to hazard identified ;	2