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COMBINED SCIENCE

0653/62

Paper 6 Alternative to Practical

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MARK SCHEME

Maximum Mark: 60

Published

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This document consists of **9** printed pages.

Question	Answer	Marks
1(a)	Benedict's (solution) ;	1
1(b)	A contains protein <u>and</u> starch ; B contains reducing sugar ; C contains starch ;	3
1(c)	wear goggles because of hot water / chemicals / named substance / (named) solutions/splashes ;	1
1(d)	ethanol / alcohol ; water <u>and</u> white emulsion ;	2
1(e)(i)	<i>any two from</i> volume of Benedict's ; mass / volume of food ; concentration of food ; time in water bath / left for same time ; temperature of water bath ;	max 2
1(e)(ii)	yellow / green indicates less (concentrated) OR orange / red indicates more (concentrated) ;	1

Question	Answer	Marks
2(a)(i)	2 test-tubes connected by delivery tube ; limewater and metal carbonate in correct places ;	2
2(a)(ii)	to avoid suck-back ;	1
2(a)(iii)	01:05 ;	1
2(b)(i)	carbon dioxide / CO ₂ ;	1
2(b)(ii)	(fastest) copper carbonate zinc carbonate (slowest) magnesium carbonate ;	1
2(b)(iii)	the more reactive the metal the slower the rate of thermal decomposition ;	1
2(c)	measure volume of gas / height of foam / foam to top of test-tube ; in a certain time ; suitable diagram showing what replaces limewater test-tube ;	3

Question	Answer	Marks
3(a)(i)	A and W ;	1
3(a)(ii)	0.15 (V) ;	1
3(a)(iii)	0.03 (W) ;	1
3(b)	so that wire does not become hot / resistance of wire might change / cell or battery may run down ;	1
3(c)(i)	axes labelled with units ; suitable choice of scales $\geq$ half the grid used ; plots correct to half a small square ;	3
3(c)(ii)	good best-fit line judgement ;	1
3(d)	(directly) proportional ; straight line through the origin ;	2

Question	Answer	Marks
4(a)	red blood cell labelled R and white blood cell labelled W ;	1
4(b)(i)	clear and continuous single outline ; nucleus lobes ; larger than original ;	3
4(b)(ii)	Correct magnification (width of cell in drawing in mm / 35) ;	1
4(c)(i)	203 ;	1
4(c)(ii)	rest before taking pulse (minimum 1 minute) ; pulse taken on suitable location on body ; count beats / pulse ; specified time ; rate = beats divided by time / multiply correctly to give beats / min (e.g. beats in 10 seconds × 6 to give bpm) ; takes it several times until similar / repeat to check ;	max 4

Question	Answer	Marks
5(a)(i)	below the level of the pencil line ;	1
5(a)(ii)	so will not run in the ethanol / will not interfere with inks / will not move / will not mix ;	1
5(a)(iii)	fire risk / flammable ethanol / stop (solvent) evaporating ;	1
5(b)(i)	3 ;	1
5(b)(ii)	red and blue and 1 other colour ; spots line up with each other / same R_f value ;	2
5(c)(i)	black ink dissolves in ethanol / does not dissolve in water ;	1
5(c)(ii)	inks spread out (more) / easier to tell the difference between the spots / errors in measurement are less ;	1
5(d)	dissolve colour from sweet into ethanol / water ; run chromatogram of sweet and red ink / black ink ;	2

Question	Answer	Marks
6(a)	measure the height of one stair <u>and</u> multiply by the number of stairs ;	1
6(b)(i)	student gets more tired / fatigued ;	1
6(b)(ii)	$(2.07 + 2.13 + 2.25 + 2.37) / 4$; 2.21 (s) ;	2
6(c)(i)	460 (N) ;	1
6(c)(ii)	to obtain a steady reading ;	1
6(c)(iii)	to avoid parallax error ;	1
6(d)(i)	1288 (J) ;	1
6(d)(ii)	583 (W) ;	1
6(e)	second student's power is less because same work done in more time ;	1