



COMBINED SCIENCE

0653/62

Paper 6 Alternative to Practical

May/June 2017

MARK SCHEME

Maximum Mark: 60

Published

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Question	Answer	Marks
1(a)(i)	quality drawing using at least half the space and not feathery ; male parts – anther and filament ; female parts – stigma (and ovary) ; some petals ;	4
1(a)(ii)	<i>correctly labelled:</i> anther ; stigma ;	2
1(b)(i)	2 lines drawn edge to edge ; correct measurement of photograph $47 \text{ mm} \pm 1 \text{ mm}$ AND (sensible) flower measurement (larger than photograph) ;	2
1(b)(ii)	correct calculation ;	1
1(c)	stigma circled (on Fig.1.1) ;	1

Question	Answer	Marks
2(a)(i)	all values of V correct 7, (10), 14, 21 ;	1
2(a)(ii)	axes labelled with units ; linear scales using at least half of grid in each direction ; at least three points plotted correctly within half a small square ; best straight line or best curve ;	4
2(a)(iii)	the higher the temperature the higher the rate of the reaction ;	1
2(b)(i)	removes timing error associated with starting the stopclock and connecting apparatus / could be too fast in first minute due to powder on chips / air in measuring cylinder ;	1
2(b)(ii)	the surface area (of the chips) is reduced / reaction slowed by smaller chips ;	1
2(b)(iii)	bubble into water ; count bubbles in a certain time / time for certain number of bubbles ; OR connect delivery tube to a gas syringe ; measure volume in a certain time / time for a certain volume ; OR place reaction flask on a balance ; measure mass in a certain time / time for certain drop in mass ;	max 2

Question	Answer	Marks
3(a)(i)	51.3 (g) ;	1
3(a)(ii)	67 (cm ³) ;	1
3(a)(iii)	read to bottom of meniscus / take reading at eye level / perpendicular to scale ;	1
3(a)(iv)	1.03 ; g / cm ³ ;	2
3(b)(i)	18 (cm ³) ;	1
3(b)(ii)	$(\frac{18.1}{(b)(i)}) 1.0 / 1.01$ (g / cm ³) ; 2 or 3 significant figures ;	2
3(c)(i)	zero error on balance / test-tube touching side of cylinder ;	1
3(c)(ii)	measuring cylinder otherwise wet / contains some water when its 'dry' mass is measured ;	1

Question	Answer	Marks
4(a)	leave in the dark ; at least 24 hours ;	2
4(b)(i)	alcohol and warm (to take out chlorophyll) ; iodine (solution) ; (brown) to blue-black ;	3
4(b)(ii)	Benedicts (solution) ; heat ; red (most sugar) / orange / yellow (less) / green (little) ;	3
4(b)(iii)	no naked flame ethanol flammable / use water-bath with ethanol as ethanol flammable / goggles chemicals in eyes / don't touch hot apparatus will burn hands / heatproof gloves so don't burn hands / gloves stop chemical burns ;	1
4(c)	light AND carbon dioxide needed (for photosynthesis) ;	1

Question	Answer	Marks
5(a)(i)	solid in beaker / solution / mixture ;	1
5(a)(ii)	make sure that all the acid has reacted ;	1
5(a)(iii)	filtration ;	1
5(b)(i)	(all water gone) decomposes (to copper oxide) ;	1
5(b)(ii)	evaporate some of the water / leave to evaporate / heat / evaporate ; leave to crystallise / cool ; filter ; leave to dry / press between filter paper ;	max 3
5(c)	add barium nitrate / barium chloride AND white ppt. ;	1
5(d)	zinc oxide ; hydrochloric acid ;	2

Question	Answer	Marks
6(a)(i)	pipette / syringe ;	1
6(a)(ii)	same surface (area) / so same (rate of) evaporation ;	1
6(b)(i)	27.5 (°C) ; 14.0 (°C) ;	2
6(b)(ii)	17.8 (°C) ; 9.0 (°C) ;	2
6(c)(i)	180 (s) ;	1
6(c)(ii)	cotton wool dropped off / misread thermometer ;	1
6(d)	cotton wool almost dry / rate of evaporation slower / most alcohol evaporated / all alcohol evaporated ;	1
6(e)	reasonable sketch (left to right curve, starting high on LHS) ;	1