Question	Scheme	Marks
6 (a)	An increase/change of 1°C will allow an extra 2.72 grams [of sugar] to dissolve	B1
		(1)
(b)	$151.2 + 2.72 \times 90 = 396$	M1 A1
		(2)
(c)	The temperature/90[°C] is outside of the range ; so (may be) unreliable	B1 ; dB1
		(2)
(d)	Use of $\bar{y} = 151.2 + 2.72\bar{x}$ So $\sum x = \left(\frac{\frac{3119}{12} - 151.2}{2.72} \right) \times 12 = 479.63235...$	M1 A1
	$S_{yy} = 851093 - \frac{3119^2}{12} \left[= 40412.9166... \right]$	M1
	$S_{xx} = 24500 - \frac{'479.63235...'^2}{12} \left[= 5329.4005... \right]$	M1
	$S_{xy} = 2.72 \times '5329.4005...' \left[= 14495.9693... \right]$	M1
	$r = \frac{'14495.9693...'}{\sqrt{'5329.4005...' \times '40412.9166...'}}$ or $r = 2.72 \times \sqrt{\frac{'5329.4005...'}{'40412.9166'}}$	M1
	$= 0.988$ *	A1*
		(7)
(e)	e.g. the points lie reasonably close to a straight line/positive correlation and the PMCC is close to 1 therefore supports a linear model	B1 B1
		(2)

	Notes	Total 14
(a)	**B1**	for a correct interpretation of the gradient in context including grams and degrees
(b)	**M1**	for substitution of 90 into the regression line
	A1	cao 396 on its own scores 2 out 2
(c)	**B1**	for a comment that implies the temperature/90[°C] is outside of the range. Allow extrapolation if not linked to 396. (Do not allow comments that imply that 396 is out of range or the use of "it")
	dB1	dependent on 1st B1 for a correct conclusion
(d)	**M1**	for clear use of the regression line to find $\sum x$ or $\bar{x}$ (may be implied by 3rd M1)
	A1	$\sum x$ = awrt 480 or $\bar{x}$ = awrt 40 (may be implied by 3rd M1)
	M1	for a correct expression for S_{yy} May be implied by awrt 40400
	M1	for a correct expression for S_{xx} ft their $\sum x$ or $\bar{x}$ May be implied by awrt 5330
	M1	for use of the gradient to find S_{xy} ft their S_{xx} May be implied by awrt 14500 or use of $r = b\sqrt{\frac{'S_{xx}'}{'S_{yy}'}}$
	M1	for a correct expression for r ft their S_{xy}, S_{xx} and S_{yy} or 2.72, $'S_{xx}'$ and $'S_{yy}'$ If these are not correct then they must be labelled before an expression for r is given for this mark to be awarded
	A1*	Answer is given so a fully correct solution must be seen
(e)	**B1**	for either the points lie reasonably close to a straight line/points or data are linear/positive correlation or the PMCC is close to 1 (Ignore any reference to strength)
	B1	for both the points lie reasonably close to a straight line/points or data are linear/positive correlation and the PMCC is close to 1 (Ignore any reference to strength) with a correct conclusion

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