Question Number	Scheme	Marks
1(a)	$S_{yy} = 39418 - \frac{560^2}{8}$	M1
	= 218	A1
		(2)
(b)	$[r =] \frac{-710}{\sqrt{"218" \times 2587.5}}$	M1
	= –0.945344... awrt –0.945	A1
		(2)
(c)	As **age increases**, **volume/blood** [pumped] **decreases** (o.e.)	B1
		(1)
(d)	**Yes** as r is close to **–** 1 (if $r <$ **–** 0.5) or **Yes** as r is close to 1 (if $r >$ 0.5) [If **–** 0.5 $\leq r \leq$ 0.5 allow "**no** since r is close to 0"]	B1ft
		(1)
(e)	$b = \frac{-710}{2587.5} = -0.27439...$ $\left(\text{allow } \frac{-284}{1035}\right)$ awrt –0.27	M1A1
	$a = \frac{560}{8} - "b" \times \frac{370}{8} [= 82.690...]$	M1
	$y = 82.7 - 0.274x$	A1
		(4)
(f)(i)	[$y = 82.7 - 0.274 \times 40$ =] 71.74.. awrt 72	B1ft
(ii)	Should be reliable since interpolation (o.e.)	B1
		(2)
	Notes	**Total 12**

(a)	**M1**	For a correct expression for S_{yy} May be implied by 218
	A1	218 (Condone 218.0)
(b)	**M1**	for attempt at correct formula. Must have their S_{yy} and given S_{xx} , S_{xy} in the correct places. Condone missing – sign awrt – 0.945 scores M1A1 but award M1A0 for awrt –0.95 with no expression seen
	A1	Awrt –0.945
(c)	**B1**	Must mention "age" and "volume/blood" No ft
(d)	**B1ft**	A correct statement with a correct reason ft their r (provided that $\lvert r \rvert < 1$) Allow 'my value / it's' to imply r. 'points lie close to a line' is B0 since there is no evidence of this
(e)	**M1**	For a correct expression for b Condone missing – sign May be implied by awrt –0.27 or an exact fraction
	A1	Awrt –0.27 Allow an exact fraction
	M1	For a correct method to find a Ft their value of b May be implied by awrt 82.7
	A1	For a correct equation for y and x with a = awrt 82.7 and b = awrt –0.274 No fractions. Both values must be 3 sf or better
(f)(i)	**B1ft**	Awrt 72 ft their regression line
(ii)	**B1**	For a comment that suggests that it is reliable since 40 is within the range of the data or interpolation e.g. Reliable since 40 is close to $\bar{x}$ / 46.25 Do not allow Reliable since awrt 72 is within the range of the data oe Condone extra non-relevant comments