Question	Scheme	Marks	AOs
5(a)(i)	[Let M be the height of a man from the club, P(M > 186) =] 0.270187… = awrt **0.270**	B1	1.1b
(ii)	[P(175 < M < 185) =] 0.6071520… = awrt **0.607**	B1	3.4
		(2)	
5(b)	[Let F be the height of a women from the club] P(F < 170) = 0.40 $\Rightarrow \frac{170-\mu}{\sigma} = -0.2533$ [calc gives – 0.253347…]	M1	3.1b
	P(F > 175) = 0.15 $\Rightarrow \frac{175-\mu}{\sigma} = 1.0364$ [calc gives 1.036433…]	M1	3.4
	Solving: $5 = \sigma(1.0364 + 0.2533)$	M1	1.1b
	σ = 3.87687… awrt **3.88**	A1	1.1b
	μ = 170.9820… awrt **171**	A1	3.2b
		(5)	
5(c)	[P(170 < F < 175) =] 1 – (0.40 + 0.15) = 0.45 (allow awrt 0.45) [P(170 < M < 175) =] 0.047282… = (allow awrt 0.047)	M1	3.4
	[P(170 < F < 175) × P(170 < M < 175) =] "0.45"×"0.047" or 0.021…	A1ft	1.1b
	So P(both) = 0.021277… awrt **0.021**	A1	1.1b
		(3)	
			(10 marks)

Notes:

(a)(i)	B1	for awrt 0.270 (accept just 0.27)
(ii)	B1	for awrt 0.607
(b)	M1	for standardising 170 with μ and σ and set equal to a z value $0 < \lvert z \rvert < 0.3$
	M1	for standardising 175 with μ and σ and set equal to a z value $1 < \lvert z \rvert < 2$
	M1	for solving their 2 linear equations, reducing to a linear equation in one variable This can be implied by two answers that are correct to 2sf.
	To award the A marks they must have scored 1st M1 and 2nd M1	
	A1	for = σ awrt 3.88
	A1	for = μ awrt 171 (Must not be from incorrect working e.g. $\sigma < 0$)
	Ans only	We need to see the linear equations in μ and σ to start awarding marks. If 1st M1 and 2nd M1 are scored and correct answers are seen we can award 5 marks.
	MR	**(15% as 0.015)** 2nd M1 for z = 2.17…, 3rd M1 implied by σ = 2.06… and μ = 170.5 … i.e. Maximum M1M1M1A0A0
(c)	M1	for correct probability for women or correct probability for men or clear intention to multiply P(170 < F < 175) by P(170 < M < 175)
	A1ft	for using P(170 < F < 175) × P(170 < M < 175) with one probability correct to 2sf
	A1	for awrt 0.021. Correct answer only is 3 marks.
	MR	**(if used in (b))** P(170< F < 175) = 0.585 (or awrt 0.58 or 0.59) answer awrt 0.027 or 0.028 All 3 marks can be scored here.