Qu 1	Scheme	Marks	AO
(a)	**Disadvantage:** e.g. Not random; cannot use (reliably) for inferences	B1 **(1)**	1.1b
(b) **(i)** **(ii)**	[Sight or correct use of] $X \sim B(36, 0.08)$ $\qquad\qquad$ P($X = 4$) = 0.167387… $\qquad$ awrt **0.167** $\left[P(X \geq 7) = 1 - P(X \leq 6) = \right]$ 0.022233… awrt **0.0222**	M1 A1 A1 **(3)**	3.3 1.1b 1.1b
(c)	P(In dance club and dance tango) = $0.4 \times 0.08 = $ **0.032** or $\dfrac{4}{125}$ or **3.2%**	B1 **(1)**	1.1b
(d)	[Let T = those who can dance the Tango. Sight or use of] $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ $T \sim B(50, \text{"0.032"})$ $[P(T < 3) = P(T \leq 2) =]$ $\quad$ 0.7850815… $\qquad$ awrt **0.785**	M1 A1 **(2)**	3.3 1.1b
		(7 marks)	

	Notes
(a)	B1 for a suitable disadvantage:

Allow (B1)	**Do NOT allow (B0)**
Not random <u>or</u> less random (o.e.)	Not representative
Cannot use (reliably) for inferences	Less accurate
(More likely to be) biased	Any comment based on time or cost
	Any mention of skew
	Any mention of non-response

(b)	M1 for sight of B(36, 0.08) Allow in words: <u>binomial</u> with <u>$n = 36$</u> and <u>$p = 0.08$</u> may be implied by one correct answer to 2sf <u>or</u> sight of P($X \leq 6$) = 0.97776...i.e. awrt 0.98 $\quad$ Allow for $36C4 \times 0.08^4 \times 0.92^{32}$ as this is "correct use"
(i)	1st A1 for awrt 0.167 $\qquad$ NB An answer of just awrt 0.167 scores M1($\Rightarrow$)1st A1
(ii)	2nd A1 for awrt 0.0222
(c)	B1 for 0.032 o.e. (Can allow for sight of 0.4×0.08)
(d)	M1 for sight of B(50, "0.032") ft their answer to (c) provided it is a probability $\neq 0.08$ $\quad$ may be implied by correct answer <u>or</u> sight of $[P(T \leq 3)] = 0.924348…$i.e. awrt 0.924 or P($T \leq 2$) as part of $1 - $ P($T \leq 2$) calc. A1 for awrt 0.785
MR	Allow MR of 50 (e.g. 30) provided clearly attempting P($T \leq 2$) and score M1A0