Question	Scheme	Marks
5(a)	$D \sim \text{B}(8, 0.05)$	M1
	$\text{P}(D \ldots 2) = 1 - \text{P}(D \,,, 1)$	M1
	= 0.0572 (calc 0.057244…) awrt **0.0572**	A1
		(3)
(b)	$E \sim \text{Po}(50)$	M1
	$\text{P}(E = 45) = \dfrac{\text{e}^{-50} \times 50^{45}}{45!}$	M1
	= 0.0458262… awrt **0.0458**	A1
		(3)
(c)	$\text{P}(T > 16) = \dfrac{50-16}{50-10}$ or $1 - \dfrac{16-10}{50-10}$	M1
	= 0.85	A1
		(2)
(d)	$\text{P}(T < 40) = 0.75$	M1
	F = number of customers ringing in the next 40 seconds has $F \sim \text{Po}(4)$	
	$\text{P}(F = 0)$ [$= \text{e}^{-4} =$ awrt 0.0183]	M1
	P(Jia reaches the correct department and $F = 0$) $= 0.75 \times 0.95 \times \text{e}^{-4}$	dM1
	= 0.013049… awrt **0.013**	A1
		(4)

	Notes		**Total 12**
(a)	**M1**	for writing or using $\text{B}(8, 0.05)$	
	M1	for writing or using $1 - \text{P}(D \,,, 1)$	
	A1	awrt 0.0572	
(b)	**M1**	for writing or using Po(50)	
	M1	for $\dfrac{\text{e}^{-\lambda} \times \lambda^{45}}{45!}$ with any value of λ (may be implied by awrt 0.046)	
	A1	awrt 0.0458	
(c)	**M1**	for a correct method to find $\text{P}(T > 16)$	
	A1	for 0.85 oe correct answer scores 2 out of 2	
(d)	**M1**	for 0.75 oe	
	M1	for attempting $\text{P}(F = 0)$ from Po (λ) allow any λ	
	dM1	dep on previous M1"0.75"$\times 0.95 \times$"e^{-4}"	
	A1	awrt 0.013	