Qu	Scheme	Marks
7(a)(i)	$P(J > 510) = P\left(Z > \frac{510-500}{25}\right)$ or P(Z > 0.4)	M1
	$= 1 - 0.6554 \Rightarrow 0.3446$ *	A1*
		(2)
(ii)	$\frac{d-500}{25} = -1.4$ (calc –1.3997…)	M1B1
	d = 465 (calc 465.007)	dA1
		(3)
(b)	$(1-0.3446)^5$	M1
	= 0.1209… **awrt 0.121**	A1
		(2)
(c)	$\frac{r-520}{k} = -1.0364$	M1A1
	$\frac{3r-800-520}{k} = 2.5758$	M1A1
	$-240 = (3\times -"1.0364k") - "2.5758"k$ or $\frac{r-520}{"-1.0364"} = \frac{3r-1320}{"2.5758"}$ oe	ddM1
	$k = 42.216...$ **awrt 42**	A1
	$r = 476.246...$ **awrt 476**	dA1
		(7)
	Notes	**Total 14**
(a)(i)	M1 for standardising using 500 and 25. Allow for 0.4	
	A1* M1 must be awarded. For 1 – 0.6554 = 0.3446 or using calc 0.34457… = 0.3446 or better	
(ii)	M1 correct standardisation using 500 and 25 equated to a z value where $1 < \lvert z \rvert < 2$	
	B1 correct expression with compatible signs eg $\frac{500-d}{25} = 1.4$ (calc 1.3997…) or allow incompatible signs with $500-("535"-500)$ **SC** $\frac{510-d}{25} = 1.4$ (calc 1.3997…) can get M0B1A0	
	dA1 dependent on M1 awarded for 465 or 465.007...	
(b)	M1 for $(p)^5$ where $0 < p < 1$	
	A1 awrt 0.121	
(c)	M1 $\frac{r-520}{k}$ = z value where $\lvert z \rvert > 1$	
	1st A1 $\frac{r-520}{k}$ = awrt -1.0364 (calc $1.036433...$) (signs must be compatible)	
	2nd M1 $\frac{3r-800-520}{k}$ = z value where $\lvert z \rvert > 2$	
	2nd A1 $\frac{3r-800-520}{k}$ = awrt 2.5758 (calc 2.5758293…) (signs must be compatible)	
	3rd M1 (dep on both Ms) for forming a correct equation in k or r only **using their z values**. ISW once correct equation seen eg $-5.685k = -240$ or $\frac{3(-1.0364k+520)-800-520}{k} = 2.5758$ Implied by r **and** k correct	
	3rdA1 for awrt 42	
	4th A1 for awrt 476 Must come from equations with **compatible signs**	
	NB awrt 476 and awrt 42 does not mean full marks. They could get M1A0M1A0 M1A1A1 if they do not have accurate z values	

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