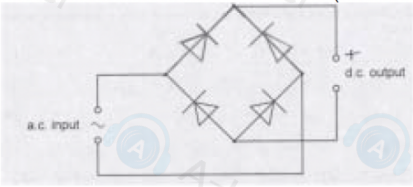


Question	Answer	Marks
7(a)(i)	two diodes added in correct directions (Both diodes pointing inwards and upwards), correct symbols only 	B1
7(a)(ii)	+ anywhere on upper output wire	B1
7(b)(i)	$\omega = 2\pi / T$ $= 2\pi / 2.5$ $= 0.80\pi$ or $4\pi / 5$ or $2.5$	C1
	(V =) $3.5 \sin(0.8\pi t)$ or $3.5 \sin(4\pi t / 5)$ or $3.5 \sin(2.5 t)$	A1

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Question	Answer	Marks
7(b)(ii)	$(P =) \frac{V^2}{2R}$ or $(P =) \frac{V_{r.m.s.}^2}{R}$ $= \frac{3.5^2}{2 \times 12}$ or $\frac{2.47^2}{12}$	C1
	$= 0.51 \text{ W}$	A1

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Question	Answer	Marks
4(a)	direction of force force on a positive charge	B1
4(b)(i)	$V = \frac{Q}{4\pi\epsilon_0 r}$ $\frac{4.0 \times 10^{-9}}{4\pi\epsilon_0 x} + \frac{-7.2 \times 10^{-9}}{4\pi\epsilon_0 (0.120 - x)} = 0$ $4(0.120 - x) = 7.2 x$ $x = 0.043 \text{ m}$	C1
4(b)(ii)	fields are in the same direction so no	B1
4(b)(iii)	straight arrow drawn leftwards from X in direction between extended line joining Q and X and the horizontal 	B1