6(a)(i)	conversion of a.c. to d.c.
6(a)(ii)	full-wave (rectification)
6(a)(iii)	three diodes with correct symbols connected into the circuit
	lower-left diode shown pointing towards the right **and** upper-left and lower-right diodes both shown pointing towards the left
6(b)(i)	$\omega = 18$ (rad s^{-1})
	$T = 2\pi / 18 = 0.35$ s
6(b)(ii)	$V_{r.m.s.} = 34 / \sqrt{2}$ $= 24$ V
6(b)(iii)	sinusoidal 'humps' with minimum $V_{OUT} = 0$ and non-zero V_{OUT} all same sign
	peak V_{OUT} shown as 34 V **or** –34 V
	two 'humps' shown, with V_{OUT} always with same sign **and** $V_{OUT} = 0$ at $t = 0$, $t = 0.175$ s and $t = 0.350$ s **and** non-zero in between
6(c)(i)	correct circuit symbol for capacitor, connected in parallel with resistor
6(c)(ii)	time constant = RC
	$= 56 \times 10^3 \times 12 \times 10^{-6}$ $= 0.67$ s
6(c)(iii)	$V_{min} = 34 \exp(-0.14 / 0.67)$
	$= 28$ V

6(a)(i)	conversion from a.c. to d.c.
6(a)(ii)	smoothing
6(b)(i)	$A = 12$ V
	$B = 2\pi / (20 \times 10^{-3})$ $= 310$ rad s^{-1}
6(b)(ii)	full-wave (rectification)
6(b)(iii)	four diodes shown, with correct circuit symbols
	four diodes correctly connected to form a bridge rectifier
6(b)(iv)	$V = V_0 \exp(-t / \tau)$ **or** $V = V_0 \exp(-t / RC)$ **and** $\tau = RC$
	$8.0 = 12 \exp(-7.3 \times 10^{-3} / \tau)$
	$\tau = 0.018$ s
6(c)	time constant = RC
	$R = (0.018 / 570 \times 10^{-6})$ $= 32\ \Omega$

8(a)(i)	half-wave (rectification)
8(a)(ii)	$V_0 = 6.0 \times \sqrt{2}$ $= 8.5\ \text{V}$
8(b)(i)	$P = V^2 / R$
	$P_0 = 8.5^2 / 45$ $= 1.6\ \text{W}$
8(b)(ii)	two humps of width $0.5T$ and two sections of zero power of width $0.5T$
	all humps drawn have width $0.5T$, minima at $P = 0$ and peaks at $P = P_0$
	correct sinusoidal shape, with smooth troughs sitting on t-axis at $P = 0$
8(b)(iii)	mean power within each hump is $\frac{1}{2}P_0$ from the symmetry of the curve
	additional half factor from removal of half of the power in each cycle
8(b)(iv)	$\langle P \rangle = V_{\text{r.m.s.}}^2 / R$ $V_{\text{r.m.s.}} = \sqrt{\left[(1.6 / 4) \times 45\right]}$ $= 4.2\ \text{V}$

6(a)(i)	conversion from a.c. to d.c.
6(a)(ii)	smoothing
6(b)(i)	$A = 12\ \text{V}$
	$B = 2\pi / (20 \times 10^{-3})$ $= 310\ \text{rad s}^{-1}$
6(b)(ii)	full-wave (rectification)
6(b)(iii)	four diodes shown, with correct circuit symbols
	four diodes correctly connected to form a bridge rectifier
6(b)(iv)	$V = V_0 \exp(-t / \tau)$ **or** $V = V_0 \exp(-t / RC)$ **and** $\tau = RC$
	$8.0 = 12 \exp(-7.3 \times 10^{-3} / \tau)$
	$\tau = 0.018\ \text{s}$
6(c)	time constant = RC
	$R = (0.018 / 570 \times 10^{-6})$ $= 32\ \Omega$

8(a)	four diodes shown (one in each gap) with correct circuit symbols
	all four diodes connected in correct direction (pointing left to right)
8(b)(i)	three lines showing exponential decay from the peaks at $0.5T$, $1.0T$ and $1.5T$, ending at the point where the decay meets the next rising peak
	three curved lines rising along the upwards dotted lines from the minima to the peaks at $1.0T$, $1.5T$ and $2.0T$
	minimum V at $(2 / 3)\ V_0$
8(b)(ii)	from graph: discharge time (from V_0 to $(2 / 3)V_0$) = $(11 / 30)\ T$
	$(2 / 3)\ V_0 = V_0 \exp(-(11 / 30)T / \tau)$
	$\ln(2 / 3) = -11T / 30\tau$ $\tau = 0.90\ T$
8(b)(iii)	time constant is increased
	line shows a larger minimum voltage **or** smaller difference between maximum and minimum voltages