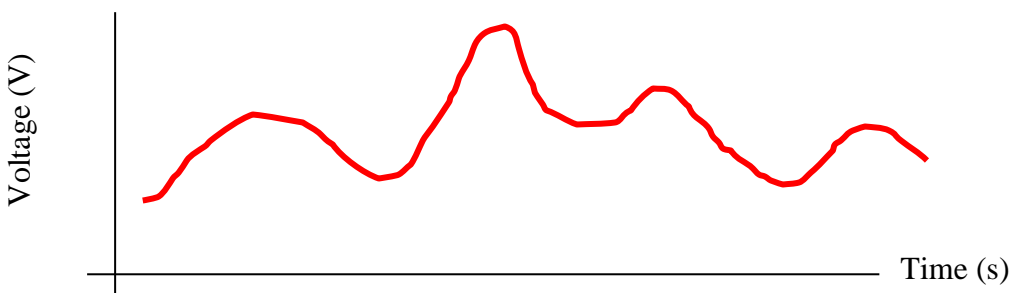
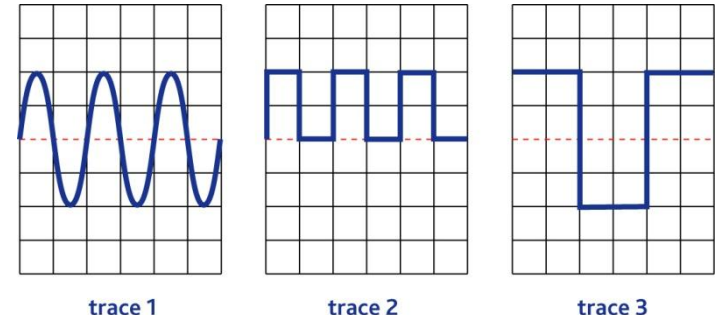


Self-Test Questions - Answers

1	(a)	The diagram shows an alternating current wave-form.	1.1	
		<p>On the diagram show:</p>		✓ ✓ ✓
	(i)	The amplitude	1.1	
	(ii)	The period	1.1	
	(iii)	The peak-to-peak voltage.	1.1	(3)
	(b)	The period of this wave is 35 ms. Calculate the frequency.	1.1	(2)
		$f = 1/T = 1 \div 35 \times 10^{-3}$		✓
		$f = 28.6 \text{ Hz}$		✓
	(c)	Another alternating current has a frequency of 6 kHz. Calculate its period	1.1	(2)
		$T = 1/f = 1 \div 6000$		✓
		$T = 1.67 \times 10^{-4} \text{ s}$		✓
	(d)	The peak to peak voltage of this waveform is read from the CRO screen and found to be 4.8 V. Calculate:		
	(i)	The peak voltage:	1.1	(2)
		$V_0 = 4.8 \div 2$		✓
		$V_0 = 2.4 \text{ V}$		✓

	(ii)	The RMS voltage:	1.1	(2)
		$V_{RMS} = V_0 \div \sqrt{2} = 2.4 \div \sqrt{2}$		✓
		$V_{RMS} = 1.70 \text{ V}$		✓
			<i>11 marks</i>	
2.	(a)	Explain what is meant by an alternating wave-form	1.1	(2)
		It is the graphical representation of a voltage (or current)		
		that is continuously changing value		✓
		to both positive and negative values.		✓
	(b)	Explain what is meant by a unidirectional waveform. Use a diagram to illustrate your answer.	1.1	(3)
		It is a continuously changing voltage (or current)		✓
		that has a positive value only.		✓
				✓
	(c)	<p>Here are three traces on the CRO:</p>  <p style="text-align: center;"> trace 1 trace 2 trace 3 </p> <p>The voltage gain is set at 0.5 V per square and the time base is set at 0.5 ms per square.</p>	1.1	
	(i)	Which one of these traces is unidirectional?	1.1	(1)

	Trace 2			✓
	(ii)	Calculate the peak voltage for trace 3	1.1	(2)
	Peak to peak voltage = $4 \times 0.5 \text{ V} = 2 \text{ V}$			✓
	$V_0 = 2 \div 2 = 1 \text{ V}$			✓
	(iii)	Calculate the RMS voltage for trace 1	1.1	(2)
	$V_0 = 1 \text{ V}$			✓
	$V_{\text{RMS}} = 1 \text{ V} \div \sqrt{2} = 0.707 \text{ V}$			✓
	(iv)	Calculate the frequency for trace 2	1.1	(3)
	$T = 2 \times 0.5 = 1 \text{ ms}$			✓
	$f = 1/T = 1 \div 1 \times 10^{-3}$			✓
	$f = 1000 \text{ Hz}$			✓
			<i>13 marks</i>	

Quality 1 mark

Total = 25marks