

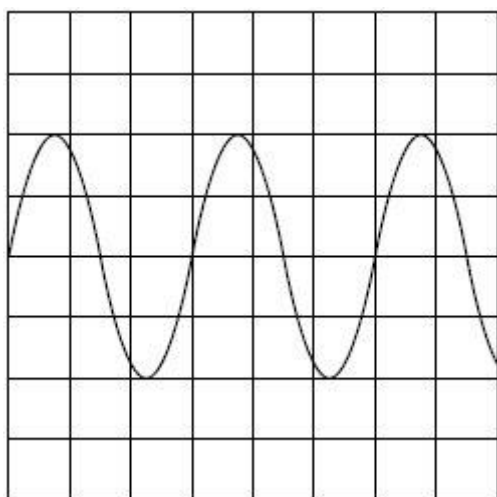
Name of the Student: _____

Max. Marks : 23 Marks

Time : 23 Minutes

Q1.

An alternating current (ac) source is connected to a resistor to form a complete circuit. The trace obtained on an oscilloscope connected across the resistor is shown in the diagram below.



The oscilloscope settings are: Y gain 5.0 V per division
time base 2.0 ms per division.

- (i) Calculate the peak voltage of the ac source.

answer = _____ V (1)

- (ii) Calculate the rms voltage.

answer = _____ V (1)

- (iii) Calculate the time period of the ac signal.

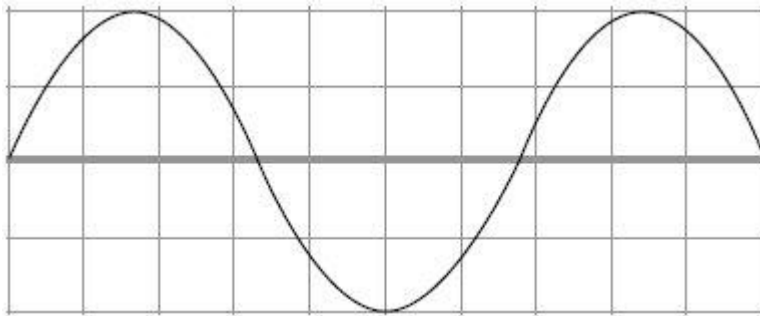
answer = _____ ms (1)

(iv) Calculate the frequency of the ac signal.

answer = _____ Hz (2)
(Total 5 marks)

Q2.

The diagram below shows an ac waveform that is displayed on an oscilloscope screen.



The time base of the oscilloscope is set at 1.5 ms per division and the y-gain at 1.5 V per division.

(a) For the ac waveform shown,

(i) Calculate the frequency

answer _____ Hz (3)

(ii) Calculate the peak voltage

(2)

(iii) the rms voltage

(2)

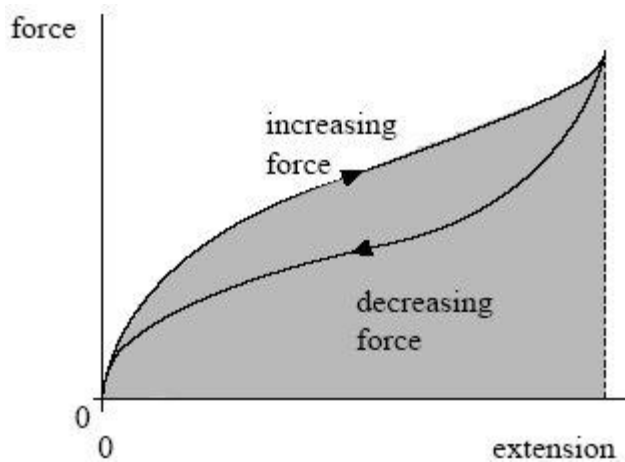
(b) State and explain the effect on the oscilloscope trace if the time base is switched off.

(2)

(Total 9 marks)

Q3.

A student investigated how the extension of a rubber cord varied with the force used to extend it. She measured the extension for successive increases of the force and then for successive decreases. The diagram below shows a graph of her results.



(a) (i) Give a reason why the graph shows the rubber cord does not obey Hooke's law.

(1)

