1)

A micrometer screw gauge is used to measure the diameter of a copper wire.

The reading with the wire in position is shown in diagram 1. The wire is removed and the jaws of the micrometer are closed. The new reading is shown in diagram 2.

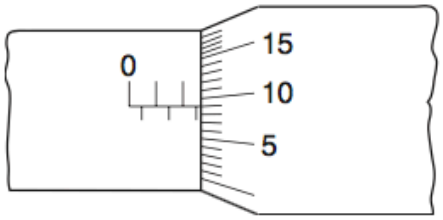


diagram 1

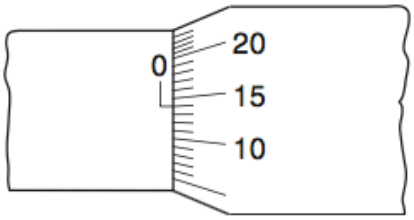


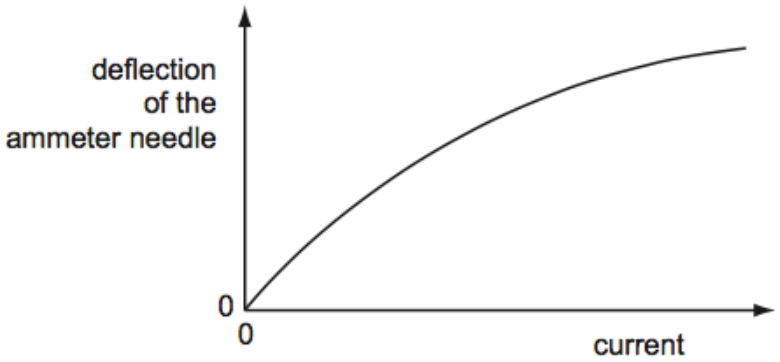
diagram 2

What is the diameter of the wire?

A 1.90 mm **B** 2.45 mm **C** 2.59 mm **D** 2.73 mm

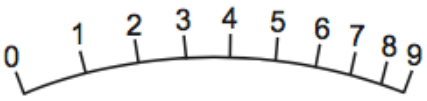
2)

The deflection of the needle of an ammeter varies with the current passing through the ammeter as shown in the graph.

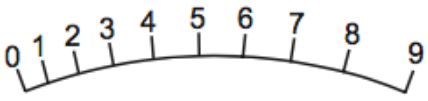


Which diagram could represent the appearance of the scale of this meter?

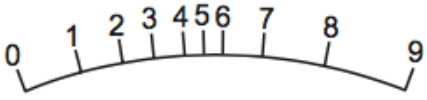
A



B



C

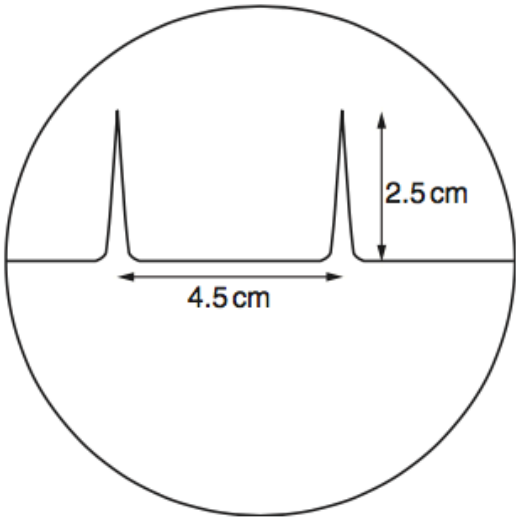


D

3)

The time-base on a cathode-ray oscilloscope is set at 6 ms / cm.

A trace consisting of two pulses is recorded as shown in the diagram.

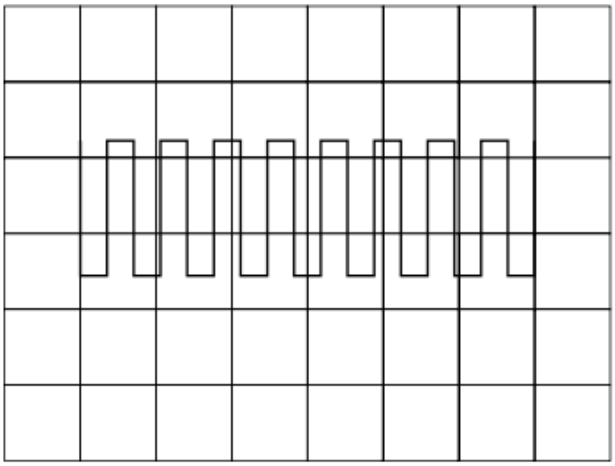


What is the time interval between the two pulses?

A 0.42 ms **B** 0.75 ms **C** 1.33 ms **D** 27 ms

4)

The diagram shows a square-wave trace on the screen of a cathode-ray oscilloscope. A grid of 1 cm squares covers the screen. The time-base setting is 10 ms cm^{-1}.

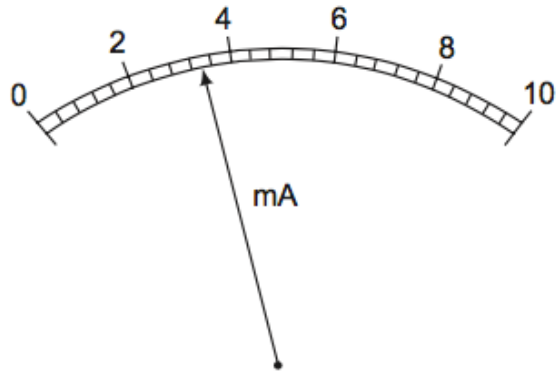


What is the approximate frequency of the square-wave?

A 70 Hz **B** 140 Hz **C** 280 Hz **D** 1400 Hz

5)

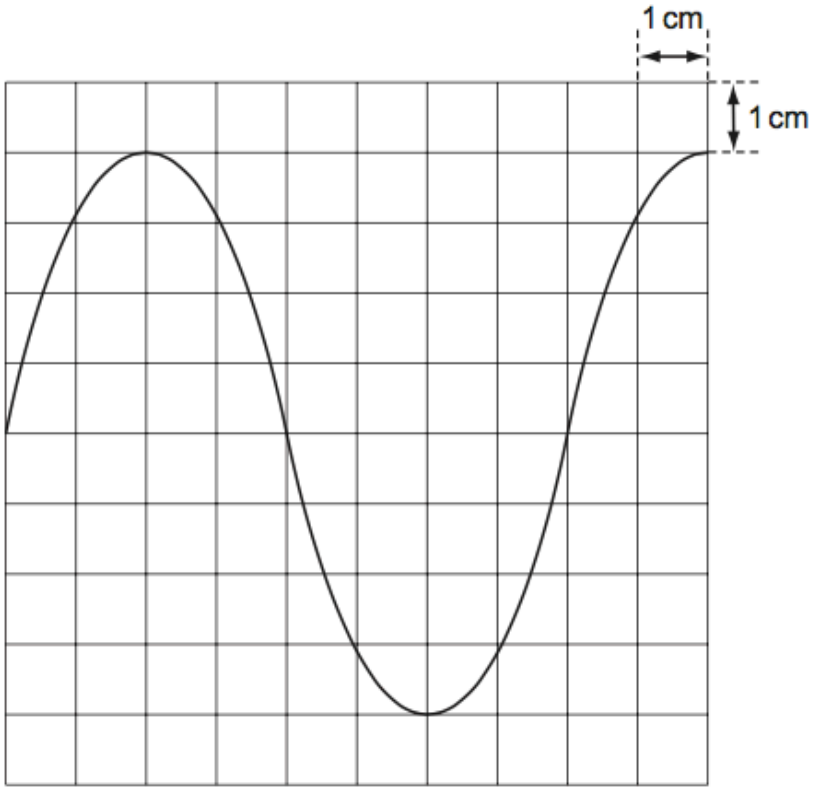
What is the reading shown on this milliammeter?



A 2.35 mA **B** 2.7 mA **C** 3.4 mA **D** 3.7 mA

6)

When a 12 V 50 Hz supply is connected to the Y-terminals of an oscilloscope, the trace in the diagram is obtained.

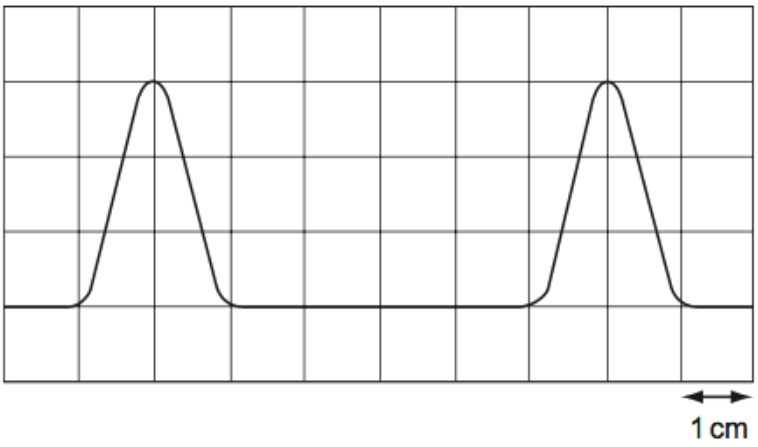


What is the setting of the time-base control?

A 2.0 ms cm^{-1} **B** 2.5 ms cm^{-1} **C** 5 ms cm^{-1} **D** 20 ms cm^{-1}

7)

The diagram shows two pulses on the screen of a cathode ray oscilloscope. A grid of 1 cm squares covers the screen. The time base setting is $1\,\mu s\,cm^{-1}$.



How long does each pulse last?

A 2 µs **B** 3 µs **C** 4 µs **D** 6 µs

8)

The uncalibrated scale and the pointer of a meter are shown in Fig. 1.1.

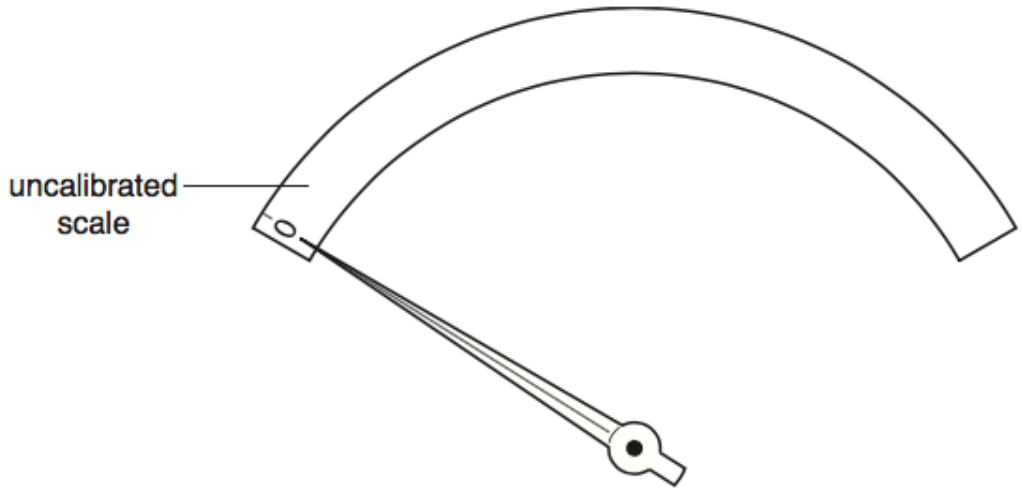


Fig. 1.1

The pointer is shown in the zero position.
The meter is to be used to indicate the volume of fuel in the tank of a car.
A known volume V of fuel is poured into the tank and the deflection θ of the pointer is noted.
Fig. 1.2 shows the variation with θ of V.

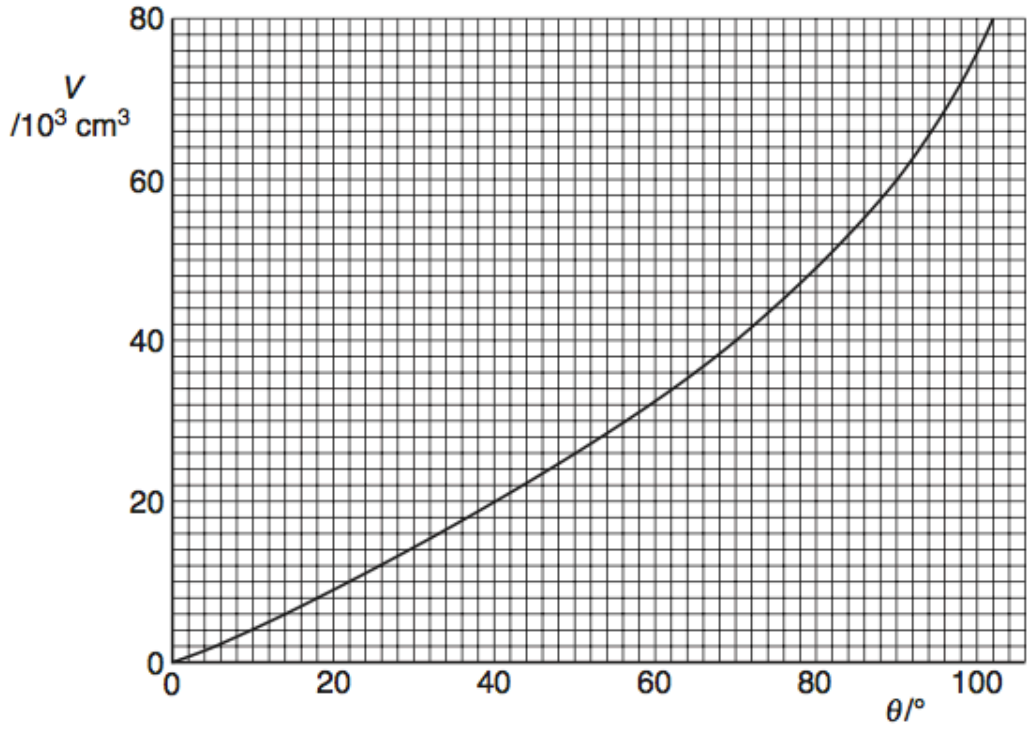


Fig. 1.2

(a) On Fig. 1.1,

(i) calibrate the scale at 20×10^3 cm^3 intervals, [2]

(ii) mark a possible position for a volume of 1.0×10^5 cm^3. [1]

(b) Suggest one advantage of this scale, as compared with a uniform scale, for measuring fuel volumes in the tank of the car.

.....

.....[1]