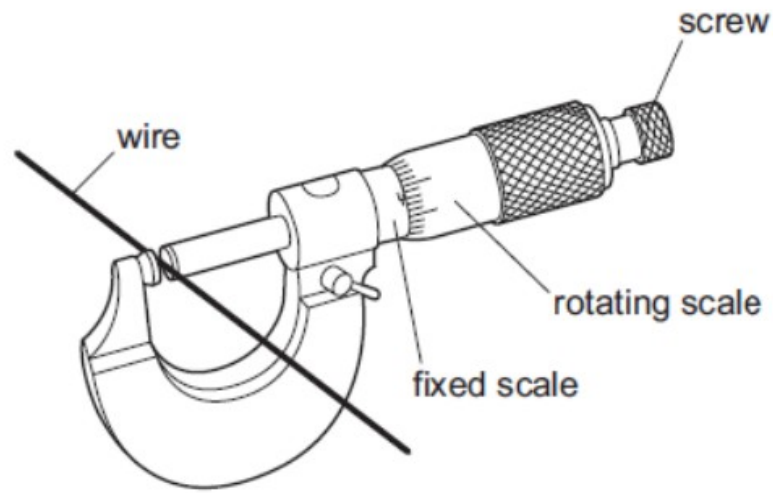


## MEASUREMENTS II

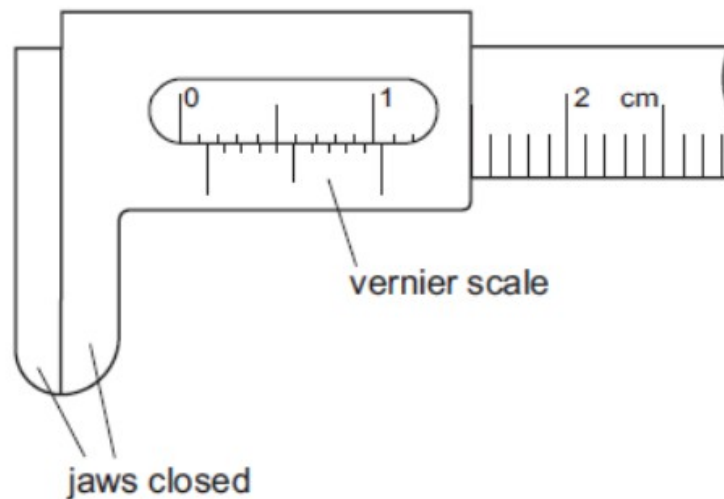
1. A micrometer is used to measure the diameter of a uniform wire.



What is done to obtain an accurate answer?

- A. Find the reading and add or subtract the zero error.
- B. Make the micrometer horizontal.
- C. Subtract the fixed scale reading from the rotating scale reading.
- D. Subtract the rotating scale reading from the fixed scale reading.

2. Vernier calipers are shown with the jaws closed.



What is the zero error?

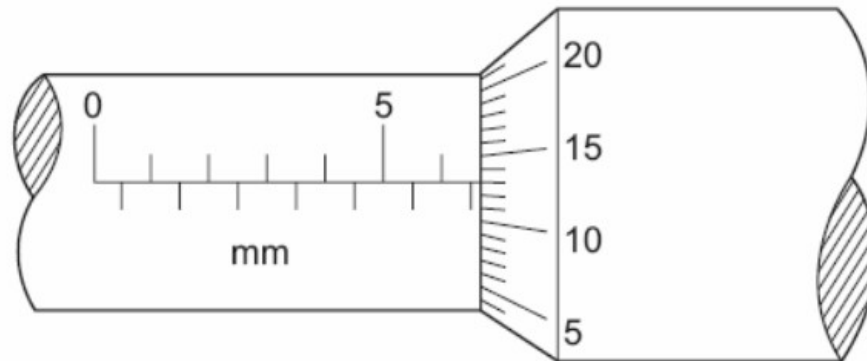
- A 0.04 cm

- B 0.05 cm
- C 0.14 cm
- D 0.15 cm

3. Sub-multiples of units may be expressed using a prefix. Which **one** of the following lists the prefixes in **decreasing** order of magnitude?

A.	centi-	micro-	milli-	nano-
B.	milli-	centi-	nano-	micro-
C.	centi-	milli-	micro-	nano-
D.	milli-	micro-	centi-	nano-

4. What is the reading on this micrometer?



- A 5.43 mm
- B 6.63 mm
- C 7.30 mm
- D 8.13 mm

5. Fig. 3.1 shows a micrometer screw gauge.

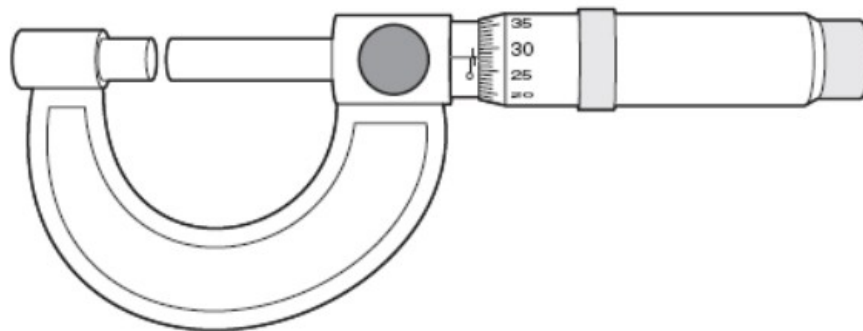


Fig. 3.1

(a) A student checks that there is no zero error on this micrometer.  
 Explain what is meant by a zero error on a micrometer.

[1]

(b) The student uses the micrometer to determine the thickness  $t$  of a sheet of paper. The student folds the paper in half three times and measures the total thickness of the folded paper. The micrometer is shown in Fig. 3.2.

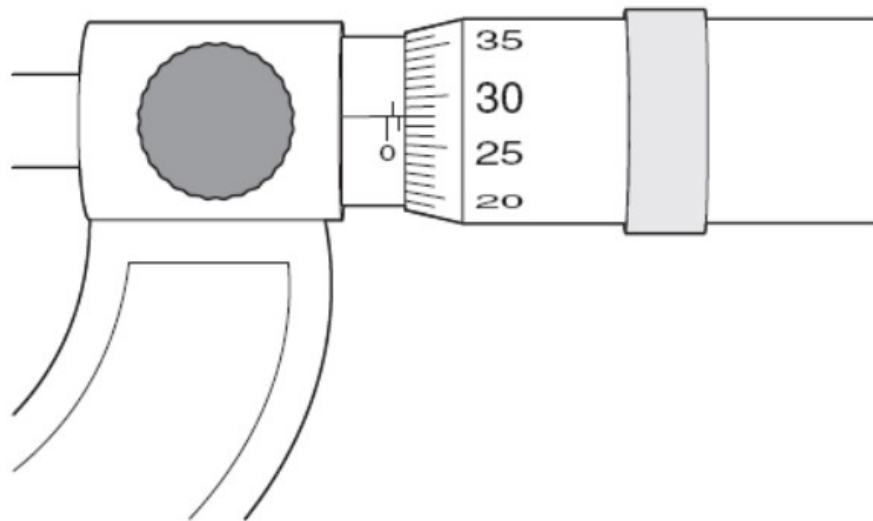


Fig. 3.2

Use Fig. 3.2 to find  $t$ . Show your working.

$t = \dots\dots\dots$  mm [3]

(c) Some modern micrometers are digital, as shown in Fig. 3.3.

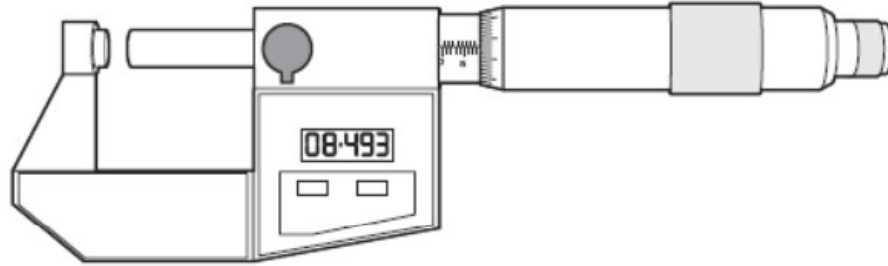


Fig. 3.3

(i) Suggest one advantage of a digital micrometer.

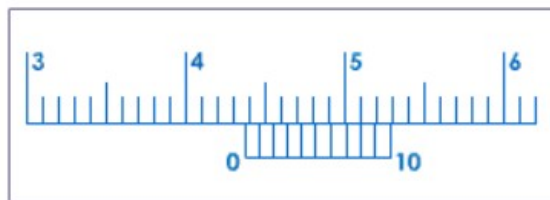
..... [1]

(ii) Suggest one disadvantage of a digital micrometer.

..... [1]

[Total 6m]

6. The diagram shown is a section of Vernier Calliper.



Find;

(i) The least count of the instrument

[2m]

(ii) The final reading, which is the thickness of a metal sheet.

[2m]

[Total 4m]

7. 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.

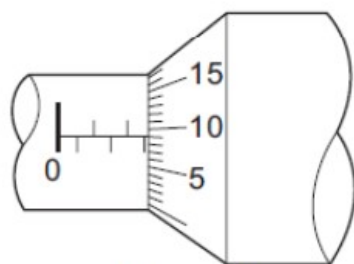


diagram 1

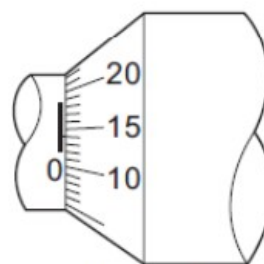
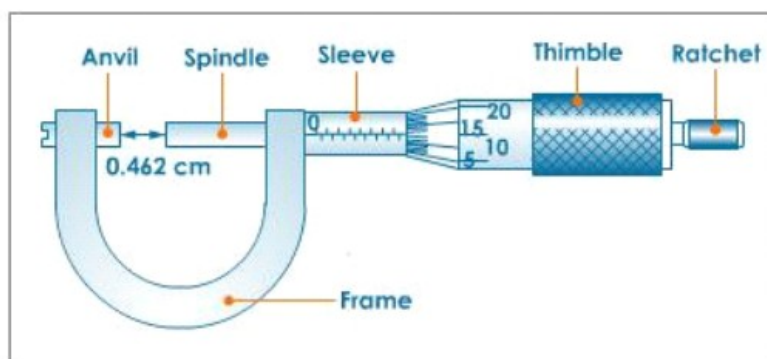


diagram 2

What is the diameter of the wire?

[3m]

8. The figure below shows a micrometer screw gauge.



(i) Explain how you would use it to measure the diameter of a wire

.....

.....

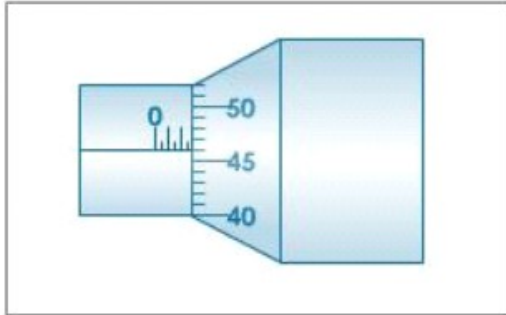
.....

..... [3m]

(ii) What do you understand by **least count** of a measuring instrument?

..... [1m]

(iii) The sketch below shows one such reading of the diameter of a given wire.



Read-off the diameter of this new wire.

[2m]  
[Total 7m]