

Figure 1

(a) Name the parts of the micrometer screw gauge labelled as A, B, C and D in figure 1.

- (i) A ..... (ii) B .....  
 (iii) C ..... (iv) D .....

- (b) (i) What is the least count of the above micrometer screw gauge in mm? ..... mm  
 (ii) Write down the scale reading for the diameter of the ball shown in figure 1 in mm.  
 ..... mm  
 (iii) Figure 2 shows a situation in which the micrometer screw gauge is adjusted to determine the zero error.

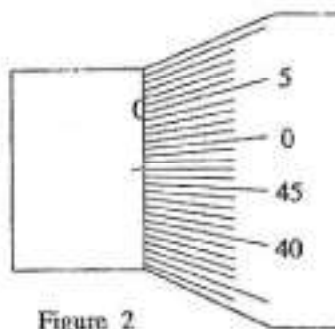


Figure 2

State the correct value for the diameter of the ball in mm. ....mm

- (iv) Write down the fractional error of the measurement for the diameter of the ball (numerical simplification is **not** necessary).

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- (v) What is the precaution taken in the micrometer screw gauge to avoid over-pressing the object?

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(c) A wire of circular cross section (length  $l = 55$  cm and diameter  $d_1 = 4$  mm) is fixed to a disk (diameter  $d_2 = 5$  cm and thickness  $t = 3$  mm) as shown in figure 3. Magnitudes given in parentheses are approximate values.

(i) Of the measuring instruments, metre rule, spherometer, vernier callipers, and the micrometer screw gauge, write down the most suitable instrument for the measurement of each of the above quantities.

Measurement	Instrument
$l$	.....
$d_1$	.....
$d_2$	.....
$t$	.....

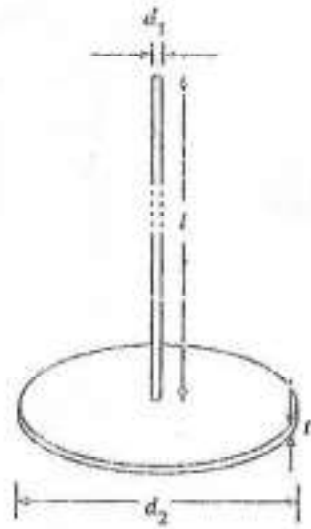


Figure 3

(ii) What experimental procedure would you follow to obtain a better value for the thickness of the disk?

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(d) The thickness of a certain type of polythene sheet is much smaller than the least count of a micrometer screw gauge. Propose a method to estimate the thickness of a sheet using a micrometer screw gauge.

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