

- 1 (a) Define the *radian*.

.....
.....
.....[2]

- (b) A stone of weight 3.0 N is fixed, using glue, to one end P of a rigid rod CP, as shown in Fig. 1.1.

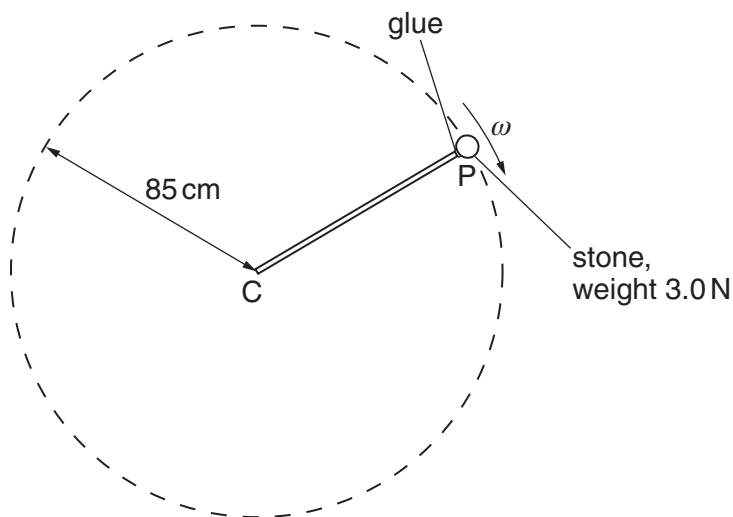


Fig. 1.1

The rod is rotated about end C so that the stone moves in a vertical circle of radius 85 cm.

The angular speed ω of the rod and stone is gradually increased from zero until the glue snaps. The glue fixing the stone snaps when the tension in it is 18 N.

For the position of the stone at which the glue snaps,

- (i) on the dotted circle of Fig. 1.1, mark with the letter S the position of the stone, [1]
(ii) calculate the angular speed ω of the stone.

angular speed = rad s^{-1} [4]