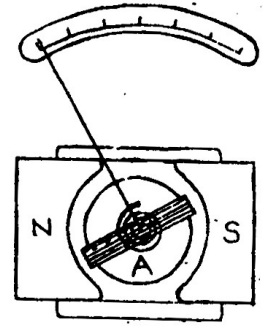Diagram shows a part of a moving coil galvanometer. The soft iron core is labelled as A and the coil is woven around it as the length becomes *l* and as the breadth becomes *b* with a *n* number of rectangular turns.

(a) What is the reason for giving a rectangular shape for the soft iron core and for the magnetic poles ?

(b) The coil used in the galvanometer has been insulated. What is the reason for that?

(c) Write down the expression for the moment of the couple of forces created on it by the magnetic field if an I current is moved across the coil and the magnetic flux density around the coil is given as B.

(d)   This moment is balanced by a spring of Spring's constant C. Write down an expression relating the moment of the couple of forces given in (c) and if the deflection of galvanometer is θ.

(e)   The resistance between the two poles of the galvanometer is measured as 2Ω. How does this resistance occur?

(f)   Full scale deflection of the galvanometer given in (e) is 15mA. Is it possible to measure the current flows in a circuit if this galvanometer is directly connected to a source with an e.m.f of 50 mV and an internal resistance 1 Ω.

(g)   If the galvanometer is connected as in (f) and if you want to show the galvanometer reading exactly as 15 mA, how do you achieve that?