24 An ammeter uses the heating effect of a current to produce the deflection of the pointer. The reading, which is proportional to the heating, is *X* when a direct circuit *I* flows through the meter. When inserted in a circuit, in which an alternating circuit of r.m.s value *I* flows, the reading is

A *X*, because it measures the r.m.s current which gives the same deflection on the scale as the direct current.

B $X/\sqrt{2}$, because it measures r.m.s current which is obtained by recalibrating the scale for a.c. use by dividing all scale readings by $\sqrt{2}$.

C $X / 2$, because the constantly changing current produces a constantly changing heating effect which averages to one half that of the direct current.

D zero, because the needle cannot follow the fast oscillations of the alternating current and hence registers zero on the scale.