A thermometer graduated according to a linear scale reads a value x_0 when in contact with boiling water, and $x_0/3$ when in contact with ice. What is the temperature of an object in ^oC, if this thermometer in the contact with the object reads $x_0/2$? (JEE MAIN 2019)

A 60

B 35

C 25

D 40

For given thermometer,

Boiling point = x_0 , Ice point = $\frac{x_0}{3}$

(B.P) (I.P)

A.T.Q - $\frac{(T)_A - (I.P)_A}{(B.P)_A - (I.P)_A} = \frac{(T)_C - (I.P)_C}{(B.P)_C - (I.P)_C}$

$\Rightarrow \frac{\frac{x_0}{2} - \frac{x_0}{3}}{x_0 - \frac{x_0}{3}} = \frac{T_C - 0}{100 - 0}$

$\Rightarrow \boxed{T_C = 25^\circ C}$