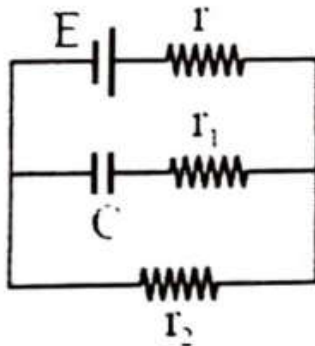


Q 01 In the given circuit diagram when the current reaches steady state in the circuit, the charge on the capacitor of capacitance C will be: [2017]

- (a) $CE \frac{r_2}{(r+r_2)}$
 (b) $CE \frac{r_1}{(r_1+r)}$
 (c) CE
 (d) $CE \frac{r_1}{(r_2+r)}$



answer

(a) In steady state, flow of current through capacitor will be zero.

Current through the circuit,

$$i = \frac{E}{r+r_2}$$

Potential difference through capacitor

$$V_c = \frac{Q}{C} = E - ir = E - \left(\frac{E}{r+r_2} \right) r$$

$$\therefore Q = CE \frac{r_2}{r+r_2}$$

