Ten charges are placed on the circumference of a circle of radius R with constant angular separation between successive charges. Alternate charges 1, 3, 5, 7, 9 have charge $(+q)$ each, while 2, 4, 6, 8, 10 have charge $(-q)$ each. The potential V and the electric field E at the centre of the circle are respectively :
(Take $V=0$ at infinity) **[Main Sep. 05, 2020 (II)]**

(a) $V = \dfrac{10q}{4\pi\varepsilon_0 R}$; $E = 0$

(b) $V = 0$; $E = \dfrac{10q}{4\pi\varepsilon_0 R^2}$

(c) $V = 0$; $E = 0$

(d) $V = \dfrac{10q}{4\pi\varepsilon_0 R}$; $E = \dfrac{10q}{4\pi\varepsilon_0 R^2}$

(c) Potential at the centre, $V_C = \dfrac{KQ_{net}}{R}$

$\because Q_{net} = 0$

$\therefore V_C = 0$

Let E be electric field produced by each charge at the centre, then resultant electric field will be $E_C = 0$, since equal electric field vectors are acting at equal angle so their resultant is equal to zero.