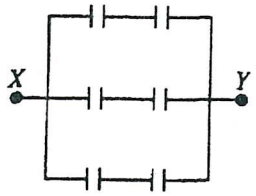
Questions 39-40 refer to the system of six 2-microfarad capacitors shown below.



39. The equivalent capacitance of the system of capacitors is

(A) $\frac{2}{3}\ \mu F$

(B) $\frac{4}{3}\ \mu F$

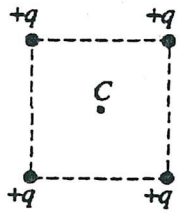
(C) $3\ \mu F$

(D) $6\ \mu F$

(E) $12\ \mu F$

40. What potential difference must be applied between points X and Y so that the charge on each plate of each capacitor will have magnitude 6 microcoulombs?

(A) 1.5 V
(B) 3 V
(C) 6 V
(D) 9 V
(E) 18 V



41. Four positive charges of magnitude q are arranged at the corners of a square, as shown above. At the center C of the square, the potential due to one charge alone is V_0, and the electric field due to one charge alone has magnitude E_0. Which of the following correctly gives the electric potential and the magnitude of the electric field at the center of the square due to all four charges?

	Electric Potential	Electric Field
(A)	Zero	Zero
(B)	Zero	$2E_0$
(C)	$2V_0$	$4E_0$
(D)	$4V_0$	Zero
(E)	$4V_0$	$2E_0$

42. A large parallel-plate capacitor is being charged and the magnitude of the electric field between the plates of the capacitor is increasing at the rate dE/dt. Which of the following statements is correct about the magnetic field in the region between the plates of the charging capacitor?

(A) It is parallel to the electric field.
(B) Its magnitude is directly proportional to dE/dt.
(C) Its magnitude is inversely proportional to dE/dt.
(D) Nothing about the field can be determined unless the charging current is known.
(E) Nothing about the field can be determined unless the instantaneous electric field is known.