41. The electric field required to accelerate a proton to $4.5 \times 10^{10}$ m/sec$^2$ is

(A) 90 N/C.

(B) 450 N/C.

(C) 900 N/C.

(D) 45 N/C.

42. The energy stored in a 100 pF capacitor, when its plates are charged to $40 \times 10^{-9}$C each is

(A) $10\mu$J .

(B) $2.5\mu$J .

(C) $4\mu$J .

(D) $8\mu$J .

43. Two bodies, one painted black, the other painted white, are put in an oven that has a temperature T, for a very long time. The final temperatures, $T_b$ of the black body and $T_w$ of the white body, are related by:

(A) $T_b = T_w$.

(B) $T_b > T_w$.

(C) $T_b < T_w$.

(D) $T_b - T_w = (T_w + T_b)/2$.

44. A gas of atoms of mass $= 4m_H$ where $m_H$ is the mass of a hydrogen atom is at room temperature $T = 300°$K. The average speed $v$ of its atoms is, roughly

(A) like light speeds, $v \sim 10^8$m/sec.

(B) like car speeds, $v \sim 10$m/sec.

(C) like brownian diffusion speeds, $v \sim 10^{-6}$m/sec.

(D) like bullet speeds, $v \sim 10^3$m/sec.