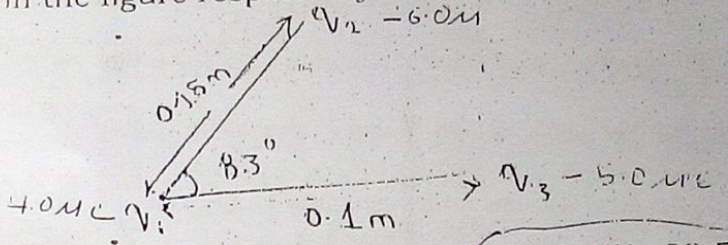
PHY

P,S,S,F 21ST MOCK TEST

Prov 9:10" the fear of God is the beginning of wisdom and the fear of the Holy one is understanding"

PHY112

(1). Find the magnitude and direction of the net electrostatic force on Q1 in the figure respectively



(a). 20.4W, 15° (b) 21.4W, 26.43° (c) 22.4IN, 29.53° (d) 29.53°, 22.41N (e) 26.43°,21.4IN

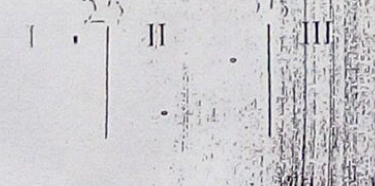
(2). In one model of the Hydrogen atom, the evolves in a circular erbit around a proton with a speed of 1.1×10^6mls. What is the radius of the electron orbit. Take k= 9×10^9 Nm^2/c^2, m_e=9.1×10^{-31}kg

lqel = 1qpl= 1.602×10^{-19}C

(a) 21A° (b) 22A° (c) 2.1A° (d)2.2A° (e)2.3A°

Use the question below to answer No 3-6

The field on either side of an infinite sheet of charge of density σ (I_{on}) is E= σ/2Eo. Use this result to find the field in the four region indicated on the figure shown below



(3) Region I (a) $\frac{0}{2E_0}$ (b)$\frac{2\sigma}{5E_0}$ (c) $\frac{\sigma}{6E_0}$ (d) $\frac{\sigma}{11E_0}$ (e) $\frac{5\sigma}{2E_0}$

(4) Region II (a) $\frac{\sigma}{2E_0}$ (b)$\frac{5\sigma}{2E_0}$ (c) $\frac{\sigma}{3E_0}$ (d) $-\frac{\sigma}{2E_0}$ (e) $2.7\frac{\sigma}{E_0}$

(5) Region III (a)

(6) Region IV (a) $\frac{\sigma}{2E}$

(5) Region III (a) $\frac{50}{2E_0}$ (b) $\frac{0}{2E_0}$ (c) $\frac{-0}{2E_0}$ (d) $\frac{60}{5E_0}$ (e) $\frac{30}{5E_0}$

(6) Region IV (a) $\frac{0}{2E_0}$ (b) $\frac{5\ 0}{0\ E_0}$ (c) $\frac{2\ 0}{5E_0}$ (d) $\frac{-0}{2E_0}$ (e) $\frac{3\ 0}{5E_0}$

(7) The phenomena whereby electric field lines are bent at the edges of a parallel plate capacitor is called (a) polarization (b) edge effect (c) threshold effect (d) standard effect (e) dielectric effect

(8) Find the potential difference between two large parallel metal plates if the separation is 3mm with electric field of 40kV/m towards –ve plate (a) 140V (b) 120 V (c) 100 V (d) 80 V (e) 60 V

(9) Given two capacitors for which $C_2 = 2C_1$ compare the potential differences when they are connected in series

(10) a parallel – plate capacitor has plates with dimension 3cmx4cm separated by 2mm. The plates are connected across a 60V battery. Find the capacitance (a)5.31F (b) 4.4pf (c) 4.4f (d) 5,31pf (e) 6f

11) If the force on a particle a magnetic field 15KN at angel of 30°. at what angle will of the force be 30KN = 90°

(12). When an electron is placed in a uniform magnetic field of 2 x 10^{-6}T which has a velocity 1.6 x 10^{10} and . find the cadius of the path of the e- in the field .

(13). The ~~lavation~~ equation for cyclotron frequency is

(a). $\frac{qm}{2\Pi B}$ (b) $\frac{2\Pi B}{qm}$ (c). $\frac{mB}{2\Pi q}$ (d) $\frac{qB}{2\Pi m}$

(14). Which of this statement is/are true

(i). The cyclotron frequency and time are dependent on speed

(ii). All particles with same ratio of q/m have the same period and frequency