Solutions to the first semester exam, Physics 2

Question 1 (1.5)

☐Power $\vec{F}_{q/q'}$ A numerical quantity,

☑Strength $\vec{F}_{q/q'}$ is inversely proportional to d^2

☑ The sum of force $\vec{F}_{q/q'}$ and force $\vec{F}_{q'/q}$ equals zero;

☑ The force $\vec{F}_{q/q'}$ has an opposite direction to the force $\vec{F}_{q'/q}$;

☐ none of the above

Question 2 (1)

☐ $I_2 + I_1 + I_3 = 0$

☑ $I_2 - I_1 - I_3 = 0$

☐ $-I_2 - I_1 - I_3 = 0$

☐ $I_2 = I_1 - I_3$

☑ $I_2 = I_1 + I_3$

(1)**Question 3**

☑ $\vec{E} = \frac{\vec{F}}{q_0}$

☐ $\vec{E} = K.\frac{qq_0}{r^2}\vec{u}$

☐ $E = K\frac{q_0}{r^2}$

☑ $\vec{E} = K\frac{q}{r^2}\vec{u}$

(1.5)**Question 4**

☐ 6 nodes

☑ 4 nodes

☑ 6 branches

☐ 8 branches

☑ 3 loops

☐ 2 loops

Question 5 (1.5)

☑ Law of conservation of energy

☐ nodes laws

☐ Law of conservation of charge

☑ $\sum_{k=1}^{n} e_k = \sum_{k=1}^{n} R_k I_k$

☑ Aum Law for Closed Circuits

Part Two

Question 1(1)

☐ Current limitation

☑ Energy storage;

☐ Energy consumption

☐ none of the above

Question 2(1)

☐ $(a, b, c) = (-q, +q, +q)$

☐ $(a, b, c) = (+q, +q, -q)$

☑ $(a, b, c) = (+q, -q, -2q)$

☐ $(a, b, c) = (-q, +q, +2q)$

☐ $(a, b, c) = (+2q, -2q, -q)$

☐ none of the above

Question 3(1)

☐ $\mathrm{I} = 400\ \mathrm{nA}$

☐ $\mathrm{I} = 40\ \mu\mathrm{A}$

☐ $\mathrm{I} = 400\ \mathrm{mA}$

☑ none of the above

Question 4 (1)

☐ 12 W

☑ 120 W

☐ 1200 W

☐ none of the above

Question 5 (1)

☑ C_0

☐ $2C_0$

☐ $4C_0$

☐ none of the above

Question 6 (1)

☐ $9 . 10^{-9}\ N.m^2/C^2$

☑ $9 . 10^{9}\ N.m^2/C^2$

☐ $8.85 . 10^{-12}\ N.m^2/C^2$

☐ $8.85 . 10^{12}\ N.m^2/C^2$

Question 7 (1)

☐ $10\ \mathrm{N/C}$

☑ $20\ \mathrm{N/C}$

☐ $40\ \mathrm{N/C}$

☐ $80\ \mathrm{N/C}$

☐ none of the above

Question 8 (1)

Electric potential	Electric field
☐ 0	0
☐ 0	$2E_0$
☑ $4V_0$	0
☐ $4V_0$	$2E_0$

☐ none of the above

Question 9 (1)

☐ the light;

☑ electrons;

☐ neutron;

☐ none of the above

Question 10 (1)

☐ $q_2 = -\ 15mC$

☑ $q_2 = -\ 5nC$

☐ $q_2 = 5mC$

☐ $q_2 = 5nC$

☐ none of the above

Question 11 (1)

☑ $1.5\ \mathrm{k\Omega}$

☐ $2\mathrm{k}\ \Omega$

☐ $3\ \mathrm{k\Omega}$

☐ none of the above

Question 12 (1)

☐ It does not have any free electrons

☐ It contains a small number of free electrons

☑ It contains a large number of free electrons

☐ none of the above

Question 13 (1)

☑ $\vec{\mathrm{E}} = 18\mathrm{x}^2\mathrm{z}\vec{\mathrm{i}} + 2\mathrm{x}\vec{\mathrm{j}} + 12\vec{\mathrm{k}}$

☐ $\vec{\mathrm{E}} = 18\mathrm{x}^2\mathrm{z}\vec{\mathrm{i}} + 2\mathrm{y}\vec{\mathrm{j}} + 12\vec{\mathrm{k}}$

☐ $\vec{\mathrm{E}} = 18\mathrm{x}^3\vec{\mathrm{i}} + 2\mathrm{x}\vec{\mathrm{j}} + 12\vec{\mathrm{k}}$

☐ none of the above

Question 14 (1)

☐ The branch of physics that studies phenomena resulting from immobile charges

☐ The branch of physics that studies electrons;

☑ The branch of physics that studies phenomena resulting from moving electric charges.

☐ none of the above