QUESTION 1

A beam of light traveling in air is incident on a transparent plastic at an angle of incidence of 26o. What is the angle of refraction if the index of refraction of the material is 1.41?

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QUESTION 2

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An object is 25 cm from a thin lens with a focal length of 15 cm. Where is the image formed?

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QUESTION 3

A photon is incident on a metal that has a work function of 6.80 eV. If the longest wavelength of light is emitted, what type of light is this?

QUESTION 4

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If a circuit has a total resistance of 24 https://content.grantham.edu/at/PH221/Lectures/W2_Assignment_1.png and 2.5 x 1023 e charges flow past a terminal point in 2.0 minutes, what is the applied voltage?

QUESTION 5

A magnetic flux of 50 Wb increases to 100 Wb in 10 seconds, what is the induced emf?

QUESTION 6

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If light is traveling from a material with an index of refraction of 1.57 into air, what is the critical angle for total internal reflection?

QUESTION 7

What is the photon energy of blue light has an energy of 5.68x10-19 J, what is its wavelength?

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QUESTION 8

An electron is accelerated from rest to a speed of 7.89 x 106 m/s, what potential difference did it cross?

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QUESTION 9

If an energy intensity of 2000 W is exerted by a spherical source what will be its average power output at a distance of 12 m from it?

QUESTION 10

The energy of a 2.00 keV electron is known to within ±3.00%. How accurately can its position be measured?

QUESTION 11

A radioactive sample has a half-life of 10.0 min. If the sample decrease by a factor of 1/16 how much time has passed?

QUESTION 12

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If a long current carrying wire created a magnetic field of 1.2 x 10-7 T, what is the current if you are 12.0 cm from it?

QUESTION 13

The mass of a proton is 1.6726 × 10-27 kg and the mass of a neutron is 1.6749 × 10-27 kg. A proton captures a neutron forming a deuterium nucleus. One would expect the mass of this nucleus to be:

QUESTION 14

A circuit has two resistor in series. The first is 1000 https://content.grantham.edu/at/PH221/Lectures/W2_Assignment_1.png and the second is 10,000 https://content.grantham.edu/at/PH221/Lectures/W2_Assignment_1.png. If the applied voltage is 12.0 V what is the power dissipated in each resistor?

### QUESTION 15

If 4.0 × 1018 atoms decay with a half-life of 9.2 years, how many are remaining after 15.2 years?

QUESTION 16

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An atom has 97 protons and 251 nucleons. If it undergoes alpha decay, what are the number of protons and neutrons, respectively, in the daughter nucleus?

QUESTION 17

In the ground state, the quantum numbers (n, l, ml, ms) for hydrogen are, respectively,

QUESTION 18

https://content.grantham.edu/at/PH221/Assignments/w8_Final_2.png

How many neutrons are produced?

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QUESTION 19

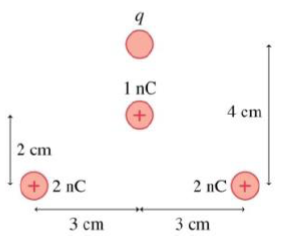
The work function of a material is 3.5 eV. If the material is the illuminated with monochromatic light (l = 300 nm), what are:

a) The stopping potential

b) The cutoff frequency

QUESTION 20

See the figure. If net force on the 1 nC charge is zero. What is q? (n is nano and means 10-9)



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QUESTION 21

A radioactive sample has a half-life of 2.5 min. What fraction of the sample is left after 40 min?

QUESTION 22

An atom has 8 protons and 17 nucleons. If it undergoes beta - decay, what are the number of protons and neutrons, respectively, in the daughter nucleus?

QUESTION 23

In the nuclear reaction e- + e+ (assume the particles are not moving to begin with), what is the net energy released in keV?

QUESTION 24

If the force between two charges decreases by a factor of 100 because the charges are moved further apart by a factor of -----

QUESTION 25

Calculate the binding energy ofhttps://content.grantham.edu/at/PH221/Assignments/w8_Final_1.png

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