Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Particle And Radiation

Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

An atom of calcium, $^{48}_{20}Ca$, is ionised by removing two electrons.

(i) State the number of protons, neutrons and electrons in the ion formed.

protons_____

neutrons_____

electrons_____

(3)

(ii) Calculate the charge of the ion.

charge _____ C

(1)

(iii) Calculate the specific charge of the ion.

specific charge _____ C kg^{-1}

(2)

(Total 6 marks)

Q2.

When ultraviolet light of frequency 3.0×10^{15} Hz is incident on the surface of a metal,electrons of maximum kinetic energy 1.7×10^{-18} J are emitted.

(a) Explain why the emitted electrons have a range of kinetic energies up to a maximum value.

_____

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_____

_____

_____

_____

(3)

(b) (i) Show that the work function of the metal is 1.8 eV.

(3)

(ii) Calculate the threshold frequency of the metal. Give your answer to an appropriate number of significant figures.

threshold frequency_____Hz

(3)

(c) (i) State and explain the effect on the emitted electrons of decreasing the frequency of the incident radiation whilst keeping the intensity constant.

_____

_____

_____

_____

(2)

(ii) State and explain the effect on the emitted electrons of doubling the intensity of the incident radiation whilst keeping the frequency constant.

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(2)

(Total 13 marks)