Atomic Physics

(1) Nuclear Reaction

-2006 1(4)

A nucleus of $^{238}_{92}U$ underwent α and β decays and its atomic number of mass number changed. What is the final stable nucleus after the decay?

(a) $^{208}_{82}Pb$ (b) $^{209}_{83}Bi$ (c) $^{206}_{82}Pb$ (d) $^{207}_{82}Pb$

-2007 1(5)

(5) In the fission process of a $^{235}_{92}U$ nucleus, several neutrons are emitted. When $^{144}_{56}Ba$ and $^{89}_{36}Kr$ are produced in the fission, how many neutrons are emitted?

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

(2) Miscellaneous

-2012 1(5) (Photoelectric effect)

(5) When a light is irradiated to a solid sodium, the emission of photoelectrons is observed if the wavelength of the light is shorter than 5.26×10^{-7}[m]. Find the approximate value of the work function of the solid sodium. Use the following numbers if necessary: the speed of light 3.00×10^{8}[m/s], and the Planck's constant 6.63×10^{-34}[J·s].

(a) 1.05×10^{-19} [J] (b) 1.16×10^{-19} [J] (c) 3.78×10^{-19} [J]
(d) 1.05×10^{-31} [J] (e) 1.16×10^{-31} [J] (f) 3.78×10^{-31} [J]