THE INTERNATIONAL UNIVERSITY
VIETNAM NATIONAL UNIVERSITY - HCMC

ASSIGNMENT PHYSICS 4
GROUP: 7-10 STUDENTS

Question 1 (25 pts) An object is placed 18.0 cm from a screen.
(a) At what point between object and screen may a converging lens with a 3.00-cm focal length be placed to obtain an image on the screen?
(b) What is the magnification of the image for each position of the lens?

Question 2 (25 pts) Determine the minimum uncertainties in the positions of the following objects if their speeds are known with a precision of 1.0×10^{-3}m/s.
(a) an electron (mass: 9.1×10^{-31}kg)
(b) a bowling ball of mass 6.0 kg.
(c) Compare two results and give your observation.

Question 3 (25 pts) A particle is in the ground level of a box that extends from x = 0 to x = L.
(a) What is the probability of finding the particle in the region between 0 and L/4?
(b) What is the probability of finding the particle in the region x = L/4 to x = L/2?
(c) How do the results of parts (a) and (b) compare? Explain.
(d) Add the probabilities calculated in parts (a) and (b). Explain the result.

Question 4 (25 pts) A sample of hydrogen atoms is irradiated with light with wavelength 85.5 nm, and electrons are observed leaving the gas.
(a) If each hydrogen atom were initially in its ground level, what would be the maximum kinetic energy in electron volts of these photoelectrons?
(b) A few electrons are detected with energies as much as 10.2 eV greater than the maximum kinetic energy calculated in part (a). Explain.

– END OF QUESTIONS –