This print-out should have 2 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

NOTE THAT THE MINIMUM UNCERTAINTY IS $\hbar/2$. ALSO, THE DEADLINE IS CENTRAL TIME

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001 10.0 points

In the photoelectric effect, it is found that incident photons with 5.00 eV of energy will produce electrons with a maximum kinetic energy of 3.40 eV.

What is the threshold frequency of this material? Answer in units of Hz.

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002 10.0 points

In the ground state of hydrogen, the uncertainty in the position of the electron is roughly 0.16 nm.

The mass of ane electron is 9.10939×10^{-31} kg and the Planck's constant is 6.62607×10^{-34} J $\cdot$ s.

If the speed of the electron is on the order of the uncertainty in the speed, how fast is the electron moving? Answer in units of m/s.