

國立成功大學
110學年度碩士班招生考試試題

編 號： 112

系 所： 工程科學系

科 目： 近代物理

日 期： 0203

節 次： 第 2 節

備 註： 不可使用計算機

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第1頁，共1頁

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Suppose that an electron of 20 keV is brought to rest in one collision with a heavy nucleus. A photon is produced in such a process. (25%)
 - (1) Find the initial momentum of the electron and the momentum of the created photon. (15%)
 - (2) Use the result of (1) to determine whether momentum is conserved. (10%)

2. What is the wavelength of a 2.0 mW laser from which 6×10^{15} photons emanate every second? (25%)

3. Given accelerating potential of 50 kV in a particular transmission electron microscope. Suppose that this were the only factor governing resolution, how small a detail could be seen? (25%)

4. Suppose an electron is confined in an infinite well and in the ground state with an energy of 0.10 eV. What is the well's length? (25%)