

PHYS2332-Modern Physics II

Winter 2020 Assignment #4

Due on Thursday March 5, 2020.

Question 1 Do problem 42 of Chapter 10.

Question 2 Do problem 44 of Chapter 10.

Question 3 Do problem 46 of Chapter 10.

Question 4 Do problem 50 of Chapter 10.

Question 5 Do problem 51 of Chapter 10. Again to receive any marks you must show works. You will receive no marks for copying down the answers from the back of the book.

Question 6 Meissner Effect and Superconducting Levitation:

In the figure below a magnet (shiny disk) is being levitated by a superconducting disk (black disk). The magnet has a field strength of $B = 0.1 \text{ T}$, and is oriented with South (S) - North (N) pointing perpendicular to the superconductor. Using the principle of diamagnetism and the Meissner, calculate the current on the surface of the superconductor. Draw the direction of the current on the superconductor. **Hint:** 1) Assume that the two discs have a diameter of about 3 cm; 2) Assume that the field strength can be calculated by the equation in problem 51 of chapter 10

