APBI 200 - LAB 3 ASSIGNMENT

Please answer the following questions:

1. Aeration porosity

    a. Calculate aeration porosity (V_a / V_t) at a tension of 60 cm for the two soil samples analyzed during this lab (i.e. medium and fine sand). Show complete calculations. Note you will have collected data for one sample; data for the 2nd sample is provided in the appendix of the lab manual.

    b. Compare aeration porosity values for the medium and fine sand samples, comment on these two calculated values; do you find this result surprising? Why or why not?

    [3 points]

2. From your data, which of the two samples has the smaller dominant pore size? Briefly explain your answer.

    [2 points]

3. Using data collected during the lab and also data shown in the appendix of the lab manual, calculate:
    a. The largest pore radius in medium and fine sand samples. Which of the two samples (i.e. medium or fine sand) has the largest pore radius? Briefly explain you answer.

    b. The dominant pore size in medium and fine sand samples.

    c.   Show how you worked out **all the units** in the capillary rise equation you used to calculate the pore radius in questions 3a and 3b.

    [5 points]

4.   The partial water retention curves obtained in lab are representative of sand fractions, with uniform particle sizes. How would you expect the partial water retention characteristics of a silt loam soil (with 8% soil organic matter) to differ and why? Hint: consider the influence of soil structure.

    [2 points]

Required attachments:
*   Your data collection sheet with calculations written out for both samples parameters (lines a through k), and for the first 2 tension values.
    Be sure to include units when you enter your data and to keep track of units when making your calculations.

    [3 points]

*   The water retention curves for medium and fine sand samples indicating air entry value (AEV) and air intrusion value (AIV).

    [2 points]

Total for lab 3 assignment   **[17 points]**