Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (please print)

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ECE 2201 – Quiz #1

September 15, 2022

1. This quiz is closed book, closed notes. You may use one 8.5” x 11” crib sheet, or its equivalent. You may use a calculator. You should **not** use a cell phone, tablet computer, or laptop computer, as you work on this quiz.

2. Show all work on these pages, and you may use both sides of each page. Show all work necessary to complete the problem. A solution without the appropriate work shown will receive no credit. A solution which is not given in a reasonable order will lose credit. You may separate the pages as you work.

3. Show all units in solutions, intermediate results, and figures. Units in the quiz will be included between square brackets.

4. Do not use red ink. Do not use red pencil.

5. You will have 30 minutes to work on this quiz.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/20

Room for extra work

Use the circuit below to solve. The charge carriers in this circuit are electrons. The expressions for some of the voltages and currents are given.

1. For Device E, are the voltage *vG* and the current *iD* in the active or passive sign relationship, at time t = 2.7[ms]?
2. Find the power absorbed by Device E at *t* = 2.7[ms].
3. Find the energy absorbed by Device B in the three [millisecond] time period, which starts at *t* = 4[ms].
4. Are the electrons gaining or losing energy as they move through Device E at *t* = 5[ms]? Briefly explain your answer, using complete sentences.
5. Which way are the electrons moving through Device B at t = 2.7[ms]. Briefly explain your answer, using complete sentences.



Diagram

Description automatically generated

Room for extra work

Use the circuit below to solve. The charge carriers in this circuit are electrons. The expressions for some of the voltages and currents are given.

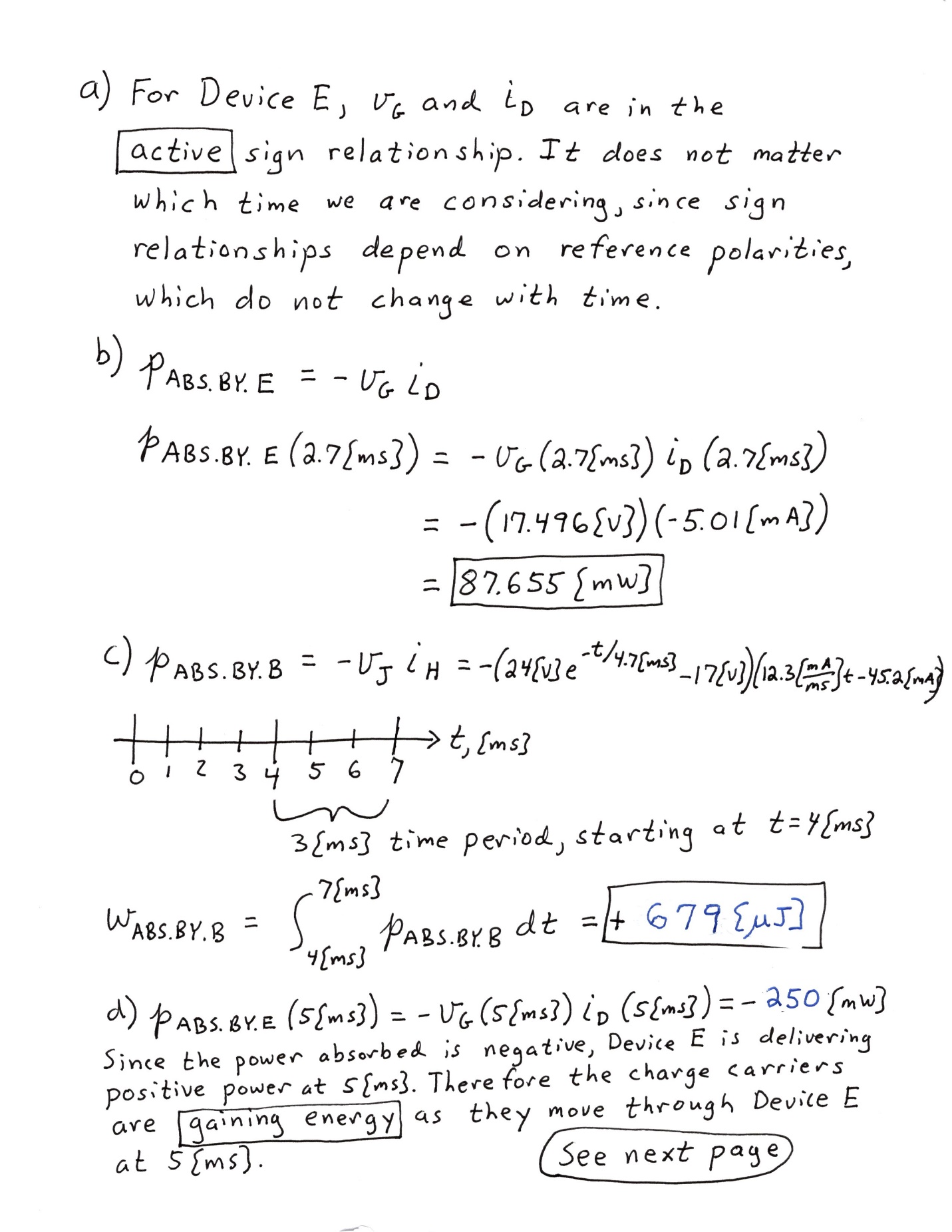
1. For Device E, are the voltage *vG* and the current *iD* in the active or passive sign relationship, at time t = 2.7[ms]?
2. Find the power absorbed by Device E at *t* = 2.7[ms].
3. Find the energy absorbed by Device B in the three [millisecond] time period, which starts at *t* = 4[ms].
4. Are the electrons gaining or losing energy as they move through Device E at *t* = 5[ms]? Briefly explain your answer, using complete sentences.
5. Which way are the electrons moving through Device B at t = 2.7[ms]. Briefly explain your answer, using complete sentences.



Diagram

Description automatically generated

Solution begins on the next page.



Text, letter

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