

# ECE 2210/00 Exam 1 given: Spring 22

Closed Book, Closed notes, Calculators OK, Show all work to receive credit

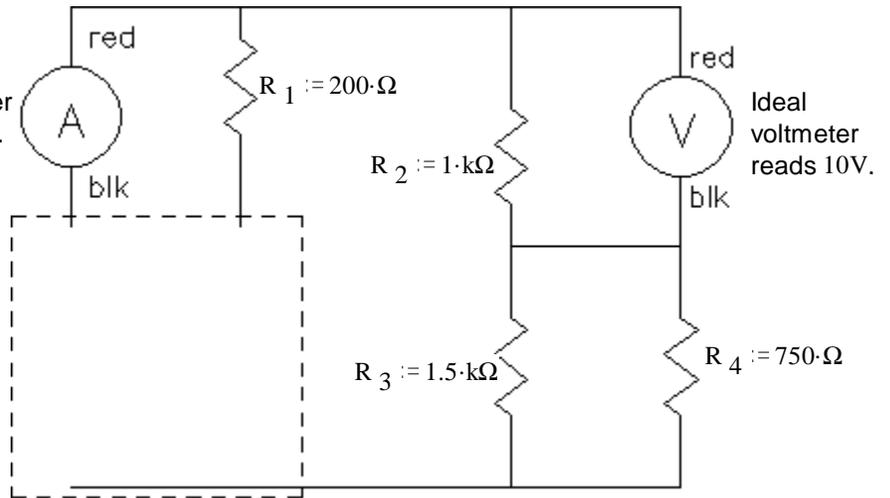
Circle answers, show units, and round off reasonably

1. (25 pts) The dotted-line box contains two parts. Determine what parts belong there and draw them in the box. Find the values of the parts. Show your work.

Ideal ammeter reads 30mA.

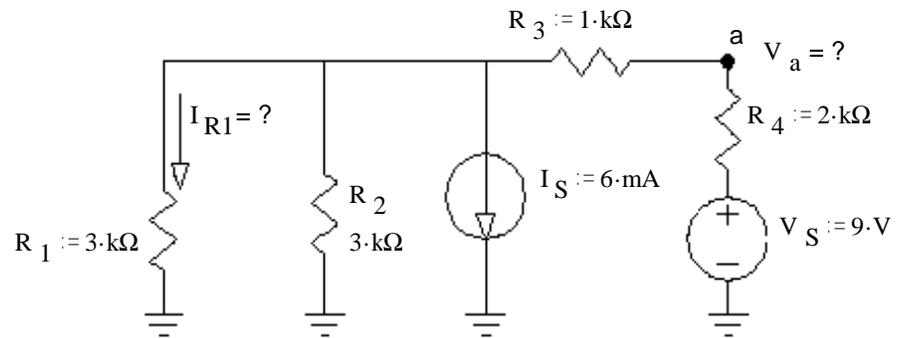
Note: There is more than one right answer.

Note: feel free to show answers & work right on the schematic



2. (25 pts) Use the method of superposition to find the current through  $R_1$  ( $I_{R1}$ ) and the voltage at node a ( $V_a$ ).  
Be sure to clearly show and **circle** your intermediate results.

Watch your signs.



3. (25 pts) A Lithium-Ion battery pack is used to power an MP3 Player. When the player is switched on the battery pack voltage drops from 3.70 V to 3.65 V and the player draws 20 mA.

a) Draw a simple, reasonable model of the battery pack using ideal parts. Find the value of each part.

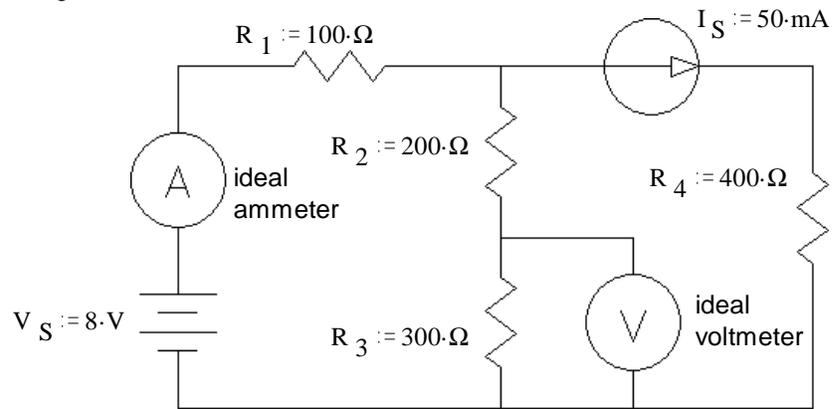
b) When MP3 player is used to play loud music it draws 80 mA. What is the battery pack voltage now?

c) Assuming the battery pack is connected to a load that draws even more current, how much power could this battery pack provide? (The maximum value)

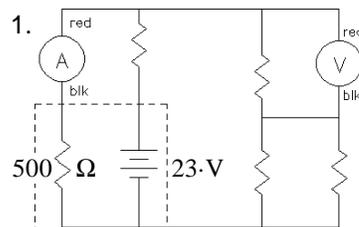
d) The battery pack is placed in a charger. The charger supplies 4.50 V. How much current flows into the battery pack?

4. (25 pts) Use nodal analysis to find the readings of the two ideal meters.

You **MUST** show all the steps of nodal analysis work to get credit, including drawing appropriate symbols and labels on the circuit shown.



**Answers**



2. 1·V  
-1·mA

