

NAME: _____ STUDENT NUMBER: _____

Assignment #2 DUE FRIDAY NOVEMBER 2nd, 2012 at 5:00pm
20 MARKS TOTAL

1. A person has moved from a supine (laying down) position to standing and feels fine (i.e., does not “pass out”):

i) What physical stress has been placed on the body? (1 mark)

ii) Using Ohm’s law, describe how the body has overcome this stress. (2 marks)

iii) Describe what variable of Poiseuille's law of resistance is being modulated to ensure that the person does not “pass out”. (2 marks)

iv) Why might one “pass out” from this stress? Why does the body evoke this response (i.e., how does it help the situation). (1 mark)

2. Over relatively short periods of time the body adapts to most stresses adequately such that the stress becomes innocuous.

Compared to Yale University long distance runner Isabelle Z. Smart, who lives in New Haven Connecticut, why might Hugh G. Matocrit (who lives at the top of Mt. Kilimanjaro) be at an advantage for the upcoming Boston Marathon? (4 marks)

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3. What is hematocrit?---make a drawing and describe (2 marks)

4. Does hematocrit change as we move from the aorta to the capillaries? Describe the mechanisms that cause changes (if any) to hematocrit. (5 marks)

5. How does hematocrit relate to Ohm's law? (there are 2 equations needed to properly answer this) (3 marks)