Medical Equipment I – 2013/14 Problem Assignment #2

- 1. Write down the steps of two methods that allow the estimation of the heart rate from ECG.
- 2. Is it possible to measure the blood pressure from an artery in the leg? Explain your answer.
- 3. How can mean arterial pressure APm or MAP be computed? Find an equation for this parameter.
- 4. Explain the dependence of stroke volume on each of the following:
 - a. Preload
 - b. Contractility
 - c. Afterload
- 5. Explain the connection between the ECG and blood pressure waveforms. Why is there a delay between the QRS complex and the peak systolic pressure?
- 6. Explain why SpO₂ measurement can be better than ECG in patients with pacemakers.
- 7. Write down the steps of an algorithm that can be used to measure the blood pressure based on the oscillometric method.
- 8. Explain why continuous monitoring of blood pressure is better than intermittent measurements.
- 9. Relate the different phases of ECG to those of CVP waveform. That is, show point-to-point correspondence between the two and explain the relationship.
- 10. Draw the series of pressure waveforms expected when inserting a balloon catheter through the venous system until it reaches the wedge position.
- 11. In the Thermodilution method used to measure the cardiac output, compute the cardiac output whose Thermodilution blood temperature curve is shown below.

