Pathophysiology of cardiovascular system
(The questions to the colloquium)

1. Write causes which can lead to chronic "left/sided" heart overload by high volume.
2. Write causes which can lead to chronic "right/sided" heart overload by high pressure.
3. How does the stroke volume .(or heart contractility) change when Starling curve shifts to the right (or to the left)?
4. Which of the cardiac indices must be used for best quantitative evaluation of heart work?
5. What formulas can be used for calculation of stroke volume, ejection fraction, heart index, cardiac output?
6. What ion has a direct relation to a (heart) muscle contraction?
7. Describe the mechanisms (3) of tachycardia in case of heart failure.
8. Name the three successive stages of cardiac hypertrophy.
9. How does the level of Ca^{2+}-ions change (↓↑) in the hypertrophied cardiomyocytes?
10. How does the relative myocardial fiber surface change in the hypertrophied cardiomyocites?
11. How do cardiac index, venous pressure, peripheral vessel resistance, aldosteron production change at congestive heart failure?
12. Describe the atriopeptide role in mechanisms of chronic congestive heart failure development.
13. What is the best mechanism for compensation for chronic heart insufficiency?
14. Describe the mechanism of secondary aldosteronism by congestive heart failure.
15. Describe the ECG patch of the right bundle branch block.
16. Write the risk factors (5) of myocardial infarction.
17. Write the pathogenetic principles of acute myocardial infarction therapy (5).
18. Give an ECG description of an acute left side transmural myocardial infarction.
19. Explain the mechanism of T-coronary wave formation in case of subepicardial (or transmural) and subendocardial ischemia (+ make a picture).
20. Explain QS-complex formation in case of transmural myocardial infarction (+ make a picture).
21. What kind of myocardial infarction are represented by the following:
    1) ST segment ↑, pathological Q wave in V_1-V_3 leads;
    2) ST on baseline, pathological Q wave in II, III, a VF leads + coronary downward T wave ?
22. Write the 4 possible mechanisms of heart fibrillation.
23. In what phase of cardiac work does coronary flow mostly occur?
24. Write the 2 main factors that can influence on the average pressure in aorta.
25. Write the formula for calculation of average arterial pressure in patients.
26. What are the main target organs at hypertonic disease?
27. What humoral substances are vasodilatators and vasoconstrictors?
28. Activation of what humoral systems is associated with increase of arterial blood pressure?
29. Describe a pathogenesis of cyanosis at heart insufficiency.
30. Why does the left ventricle more often involve in ischemic process?
31. Write causes (1,2,3) and consequences (1,2,3) of the lung vessels hypertension.
32. Write three main organ-targets to angiotensin.
33. Describe the "Starling" low.
34. How much times must coronary flow increase in order to teach it maximum in comparison with normal at rest (coronary reserve)?
35. What differens can be noticed between indexes of central venous pressure in two patients, when one has cardiogenic shock and another – hypovolemic shock?
36. How will change the indices of pulmonary capillare pressure (↑↓) after successful treatment of left ventricular failure?
37. The student should be able to define and calculate such indices of cardiac functions as stroke volume, ejection fraction, cardiac output (2 formulas), cardiac index, coefficient of O_2 utilization, the volume of circulating blood.