Biochemistry practice questions

Experiment 8.

1. What kind of reaction is catalyzed by aldolase (substrates and products)? (1 point)
2. During the aldolase activity measurement what kind of components did the reaction mixture contain and what were role of them? (2 points)
3. How can we measure the aldolase enzyme activity in serum? (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
4. What is the clinical relevance of aldolase activity measurement, in what diseases can it be increased? (2 points)
5. What kind of reaction is catalyzed by LDH and how can we push the equilibrium towards the formation of pyruvate? (2 points)
6. How can LDH activity be determined in serum? (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
7. What are the basis of kinetic and end-point measurements? (2 points)
8. Describe the electrophoretic separation of LDH isoenzymes! (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
9. What is the principle of electrophoresis and what factors influence the running speed of the components? (1 point)
10. After electrophoretic separation of LDH isoenzymes how did we detect the enzymactivities (what did the staining chamber contain and how was the color formed)? (2 points)
11. Why is it important to know the isoenzyme pattern in a diagnostic point of view? (1 point)
12. In which tissue is the highest activity of the LDH1-2-3-4 and -5 isoenzymes? (2 points)

Experiment 10.

13. First and indicator reaction equations of serum GOT and GPT activity measurements by optical test. (2 points)
14. How can we determine GOT and GPT activity in serum with optical test? (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
15. What happens to the serum GOT and GPT activities during heart attack? (1 point)
16. Definition of enzyme activity units (U, katal), what is concept of specific enzyme activity? (2 points)

17. How did we prove the reversibility of transaminase reactions? (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
18. How do transaminases work? What are the co-factors? (2 pints)
19. Which organs have the highest concentration of GOT and GPT? (1 point)
20. What is the clinical relevance of GOT and GPT activity measurement? (2 points)
21. Delineate the concept of simple and coupled optical tests! (2 points)
22. What is the molar extinction coefficient? (1 point)

Experiment 2.

23. How can you detect phenylketonuria disease in serum and urine? (write down the detailed description and explanation of the practical steps of the measurement) (3 points)
24. List the symptoms of phenylketonuria disease and explain their biochemical background. (2 points)
25. What is the principle of ion-exchange chromatography? (2 points)

Mitochondrium:

26. Give the definition of the P/O ratio, explain how it was determined on the practical. (3 points)

27. What was the role of the following compounds on the practical? (2 points)
    - oligomycin
    - atractyloside
    - dinitrophenol
    - CN^-, CO
    - malonate
    - succinate
    - malate

28. Which „uncoupler" did you use on the practical? Explain the mechanism of its effect and write down how does it change the RC (respiratory control ratio) and P/O ratio and why? (2 points)

29. Draw how does the rate of substrate oxidation changes if we add the following compounds to the mixture which contains incubating buffer and glutamate-malate substrate (2 points):
    - ADP
    - Oligomycin
    - DNP (2,4-dinitrophenol)
    - KCN
    - Na-ditionite solid

30. Molecular structure recognition: 2 structures (2 points)