

**Biochemistry practical questions**  
**2015/2016. 2<sup>nd</sup> semester**

1. The albumin/globulin ratio can be determined by the combination of salt precipitation, electrophoresis, biuret- and bromcresol purple reactions. What do you know about this ratio, when and how does it change? (2 points)
2. During electrophoresis the globulin fractions separate. When and in which diseases might be this informative? (2 points)
3. What is the difference between serum and plasma? (1 point)
4. What is the role of albumin in the circulation? (1 point)
5. What is the difference between determination by biuret and bromcresol purple? (2 points)
6. What is the basis of salting out proteins? (1 point)
7. In gel-filtration what are external volume, elution volume and total volume? (3 points)
8. What is size exclusion molecular weight? (1 point)
9. Describe the separation of proteins by electrophoresis! (2 points)
10. Which compounds and by which method were determined in the eluted fractions after gel filtration in the “fractionation of serum proteins” practice? (2 points)
11. How did you decide that the separation by gel filtration was successful in the “fractionation of serum proteins” practice. (1 point)

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12. What is the role of  $\text{Ca}^{2+}$  in blood clotting? (2 points)
  13. List three compounds used as anticoagulant and describe their action! (3 points)
  14. What is the role of factor XIII in blood clotting? (1 point)
  15. Determination of thrombin time and its clinical relevance. (3 points)
  16. Structure of heparin and its role in blood clotting. (1 point)
  17. What kind of processes starts by adding thrombin to the plasma? (2 points)
  18. In which case were soft clot formed in the “determination of thrombin time” practice? (1 point)
  19. What was the role of urea in the “determination of thrombin time” practice? (1 point)

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20. During the ACh enzyme activity determination the reaction mixture contains phosphate buffer, S-buriryl-thiocholine and 5,5'-dithio-bis-2-nitrobenzoic acid. Describe the role of the individual compounds! (2 points)
  21. During the MAO enzyme activity determination the reaction mixture contains phosphate buffer, benzylamine, Na-azyd, phenol, 4-aminoantipyrin and peroxidase. Describe the role of the individual compounds! (2 points)
  22. How did we define the units of enzyme activity? (1 point)
  23. What does the specific activity mean and what is its dimension? (1 point)
  24. Describe the competitive enzyme inhibition! (2 points)
  25. Describe the non-competitive enzyme inhibition! (2 points)
  26. What is  $K_M$  value and what is its dimension? (1 point)
  27. What is  $K_I$  value and what is its dimension? (1 point)
  28. What type of compound can be considered as acetylcholine-esterase inhibitors? (1 point)
  29. What type of reaction was used for ACh-esterase activity determination? (1 point)
  30. What reaction is catalyzed by MAO and how was its activity determined? (3 points)