1. Formulate one of the two consumer choice optimization problems and describe the methods used for its solution. How are the consumer preferences described?
2. Describe the properties of the Cobb-Douglas or the CES production function and formulate the optimization problems they are applied to.
3. Describe the key ideas on which the Pure Exchange Model is based. What is the Edgeworth Box and how it is applied?
4. Describe the methods applied in modeling of the Binary Response Variables.
5. Describe the methods used for the quality assessment of the fitted microeconometric models.
6. Describe the Multinomial Logit Model: its basic model, the methods of estimation of the model parameters and the interpretation of these parameters.
7. There are two approaches in the multidimensional data analysis: stochastic (Statistics) and analytical (Data Mining). Describe the pros and cons of both approaches and the examples of their applications.
8. In the multivariate analysis, classification/discrimination models are very often used. Select one of these models and give an example of its implementation.
9. What is the main purpose of the negotiations with customer?
10. What is the purpose of the Software Engineering?
11. Describe three types of the Software Maintenance.
12. Discuss the ISO/OSI RM model.
13. Spot the differences between IPv4 and IPv6 protocols.
14. Discuss the types of computer networks.
15. Describe the data acquisition methods necessary in model simulation.
16. Describe the IT tools used in the business processes modeling and analysis.
17. Describe the types of notation used in the business processes modeling.
18. Explain the concept of "stationarity" in time series analysis.
19. Explain the term "cointegration of the time series".
20. Discuss the methods of the non-stationary time series analysis.
21. Describe the transportation model and its applications.
22. Describe the objectives of the sensitivity analysis in LP problems.
23. Describe the elements of LP problem. Describe the methods that can be applied to solve it.
24. What is an idea of stratified sampling? Is it better than an idea of simple random sampling without replacement? Justify your answer.
25. Discuss the problem of optimal allocation in stratified sampling.
26. Name three types of objects in database and describe their roles.
27. What is a difference between a Foreign Key and a JOIN?
28. Describe the known column data types.
29. Present the characteristics/definition of massive data.
30. Describe the algorithm for a decision tree construction.
31. Name at least three accuracy measures used in the classification quality assessment.
32. Discuss the methods of the nonstationary time series forecasting.
33. Discuss the problem of the time series decomposition.
34. Discuss the methods of the forecast quality assessment.
35. Define and describe the characteristics of forward and futures contracts.
36. Define and describe the characteristics of standard vanilla options.
37. Define and describe the characteristics of exotic options.
38. Define and describe the characteristics of transactional systems.
39. Discuss the differences between the transactional and the analytical systems.
40. Identify and the discuss differences between the explanatory variables selection procedures for the regression and the classification models.
41. Present the characterization and the examples of applications of the supervised and the unsupervised learning methods.
42. Present and discuss the examples of applications of the dimensionality reduction methods.
43. Describe seven principles of the PRINCE2 method.
44. Present the definition of ITIL. Describe the key elements of service management.
45. What kind of models can be used in the analysis of the potential and the range of market?
46. Describe the ideas, the interpretations and the assessment methods of discriminant analysis.
47. Describe social networks: their types, their centrality measures and their role in the market analysis.
48. Define the survivor and the hazard functions.
49. State the goals of survival analysis.
50. Describe the meaning of censored data.