

## 5 Project – submit your solution to petr.kovar@vsb.cz

If you speak Czech, please submit the project to odevzdávárna dqa2sbt.

### Combinatorics

- 5.1. There were five kinds of postcards available in the information center. First and second kind are attractive and often bought, so the office has only five pieces (of each of these) available, while the supply of the other kinds is sufficient (43 pieces of each kind at least). In how many ways can a tourist choose 10 cards, so that he has at least one card of each type? (3 b)
- 5.2. From a deck of 32 cards two players were given five cards each, First player received so called fullhouse – three sevens and two queens. What is the probability that the second player got a royal poker (4 kings along with some fifth card)? (2 b)

### Graph Theory

- 5.3. Explain why the edge-connectivity of a non-trivial graph is smaller or equal to the smallest degree of the graph. (3 b)
- 5.4. Draw some graph  $G$  with 9 vertices and 21 edges, which has at least two edge-disjoint isomorphic spanning trees (draw the spanning trees in two colors). (2 b)

### Guidelines

Write the project using a computer, include the title with your name, student ID, number of the project, year and a grading table (see the sample project). The project will contain a detailed description of your solution for each problem. If you skip a problem, mark it clearly in the text by saying „*I did not solve the problem number X*“.

Submit your project to petr.kovar@vsb.cz as an uncompressed PDF file, use your student ID in the name of your submitted file.

You will be awarded 0 upto 2 or 0 upto 3 points for each of the problems.

Submit your project no later than on **Monday 7.12.2015 at 23:59**.