

Homework 7. Graph Theory

In all questions you have to choose one correct answer from the list.

Question 1. There are 30 cities in a certain country, each connected to each with a road. What is the largest number of roads that can be closed for repairs so that it is possible to travel from each city to each?

- ☐ A 405
- ☐ B 406
- ☐ C 840
- ☐ D 841
- ☐ E 870

Question 2. 8 chess players participate in a chess tournament. According to the rules of the tournament, each participant must play exactly one game with each other. At the moment there are no three chess players, each of whom has already played a game with both others. What is the largest number of games that could have been played at the moment?

- ☐ A 12
- ☐ B 13
- ☐ C 14
- ☐ D 15
- ☐ E 16

Question 3. Before the start of the lessons, the class teacher noticed that each student in his class shook hands with six girls and eight boys. The number of handshakes between boys and girls was five less than the number of other handshakes. How many students are in the class?

- ☐ A 22
- ☐ B 25
- ☐ C 28
- ☐ D 30
- ☐ E 35

Question 4. In a tree, there are 3 vertices of degree 4, 5 vertices of degree 3 and 7 vertices of degree 2. The other vertices have the degree 1. How many vertices are there in the tree?

- ☐ A 20

☐ B 22

☐ C 24

☐ D 26

☐ E 28

Question 5. There are more than 25 but less than 35 people in the class. Each boy is friends with four girls, and each girl is friends with six boys. How many people are in the class?

☐ A 26

☐ B 28

☐ C 30

☐ D 32

☐ E 34.