

*15<sup>th</sup> Hungarian Geographical Contest 2023/24*

*2<sup>nd</sup> Round*

## **Written Test**

### **Question and Answer Booklet**

12 January 2024

Password: .....

Date of birth: .....



NEMZETI KULTURÁLIS  
TÁMOGATÁSKÉZELŐ



KULTURÁLIS ÉS INNOVÁCIÓS  
MINISZTERIUM

Nemzeti  
Tehetség Program



Földtudományi  
PTE TTK 1996

## Instructions for Students

1. Fill in your password and your date of birth on the front page of this Question and Answer Booklet (QAB) and also on the top of all pages.
2. The test consists of 6 sections, marked with letter A-F. You can find all the sources (maps, figures, photos, and tables) referred to in the Source Booklet (SB).
3. You can earn a total of **120 points**. Each section has a different maximum value:

|   |    |
|---|----|
| A | 24 |
| B | 16 |
| C | 18 |
| D | 22 |
| E | 18 |
| F | 22 |

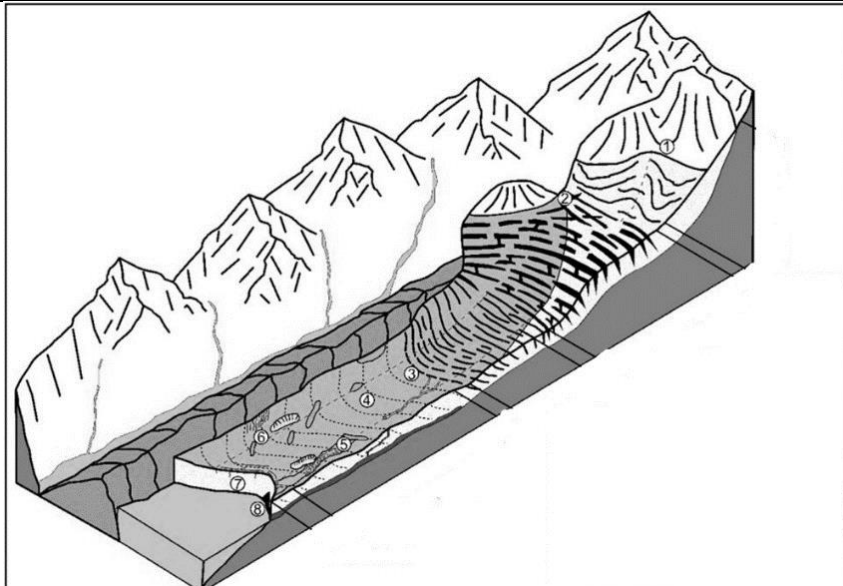
4. All questions should be answered in the spaces provided in this booklet. Only answers given in QAB will be accepted: any answers written in the (SB) will be ignored. The backsides of the papers are available for notes and calculations, but NOT for answers.
5. Only the required number of answers (reasons, examples etc.) will be accepted in the order they are written. For instance, if the question asks for 2 reasons and you give more than 2, only the first 2 reasons will be marked.
6. Where appropriate, write sentences or phrases, not single words.
7. You might need a calculator, a ruler, crayons, and pencils during the test.
8. You have a total of 180 minutes to answer all questions.

**Good luck!**

**A. “At dawn in silence moves the mighty stream...” (Henry Van Dyke)  
[24 points]**

|             |                                                                                                                                                                                                   |                 |          |        |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|--------|
| <b>A.1.</b> | <i>Look at the pictures at A.1.1 and 2. in the Source Booklet (hereafter referred to as SB)! One of the valleys depicted is formed by a glacial, and the other one is formed by river erosion</i> |                 |          | points |
| A.1.1.      | Which picture illustrates the effect of the glacial erosion?<br>Mark it!                                                                                                                          | 1               | 2        | 0.5    |
| A.1.2.      | Based on the pictures, name three differences between the two types of valleys!                                                                                                                   |                 |          | 3.0    |
|             |                                                                                                                                                                                                   |                 |          |        |
|             |                                                                                                                                                                                                   |                 |          |        |
| <b>A.2.</b> | <i>Moraine is an accumulation of unconsolidated debris (regolith and rock), formerly transported by a glacier (or ice sheet).</i>                                                                 |                 |          |        |
| A.2.1.      | There are more possible classifications of moraine. Study picture 2.1. and pair the numbers in the picture with the types given here                                                              |                 |          | 2.0    |
|             | a. Recessional moraine                                                                                                                                                                            |                 |          |        |
|             | b. Medial moraine                                                                                                                                                                                 |                 |          |        |
|             | c. Lateral moraine                                                                                                                                                                                |                 |          |        |
|             | d. Ground moraine                                                                                                                                                                                 |                 |          |        |
| A2.2.2.     | The morphological form labelled No. 4 creates a significant ridge high over the level of the glacier’s surface. Explain shortly how it was created! When might it happen?                         |                 |          | 2.0    |
|             |                                                                                                                                                                                                   |                 |          |        |
| A.2.3.      | Glacial erosion and accumulation have formed several lakes in Europe. Select the lakes with glacial origin from this list (mark Y/N).<br>Pair the lakes with the letters of the map A.2.3. in SB! | Map label (A-H) | glacial? | 8.0    |
|             | 1. Lake Garda                                                                                                                                                                                     |                 | Y N      |        |
|             | 2. Lake Vättern                                                                                                                                                                                   |                 | Y N      |        |
|             | 3. Ijsselmeer                                                                                                                                                                                     |                 | Y N      |        |
|             | 4. Lake Geneve                                                                                                                                                                                    |                 | Y N      |        |
|             | 5. Lago Maggiore                                                                                                                                                                                  |                 | Y N      |        |
|             | 6. Lake Constance / Bodensee                                                                                                                                                                      |                 | Y N      |        |

PW:

|        |                                                                                                                                                                                                                                                     |       |     |   |     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|---|-----|
|        | 7. Lake Skadar / Shkodra                                                                                                                                                                                                                            |       | Y   | N |     |
|        | 8. Lake Wörth / Wörthersee                                                                                                                                                                                                                          |       | Y   | N |     |
| A.2.4. | If you have found all the glacial lakes, you probably would be able to give three common characteristics of these types of lakes!                                                                                                                   |       |     |   | 3.0 |
|        | 1.                                                                                                                                                                                                                                                  |       |     |   |     |
|        | 2.                                                                                                                                                                                                                                                  |       |     |   |     |
|        | 3.                                                                                                                                                                                                                                                  |       |     |   |     |
| A.2.5. | Switzerland is sometimes described as the “Water Tower of Europe”. Melted water from the Swiss glaciers (all located in the southern part of the country) is transported by four different big rivers to four different seas. Name the rivers/seas! |       |     |   | 4.0 |
|        |                                                                                                                                                                                                                                                     | River | Sea |   |     |
|        | 1.                                                                                                                                                                                                                                                  |       |     |   |     |
|        | 2.                                                                                                                                                                                                                                                  |       |     |   |     |
|        | 3.                                                                                                                                                                                                                                                  |       |     |   |     |
|        | 4.                                                                                                                                                                                                                                                  |       |     |   |     |
| A.2.6. | Read the poem in the SB! This was written by an American poet who spent years in Europe serving as an ambassador and travelled to Switzerland too. This poem was written in Zermatt in 1872.                                                        |       |     |   |     |
|        | 1. Actually, it is quite a poetic but exact description of a glacier. Could you explain what crevasses are? How are they formed?                                                                                                                    |       |     |   | 1.0 |
|        | 2. Mark the crevasses on this diagram!                                                                                                                                                                                                              |       |     |   | 0.5 |
|        |                                                                                                                                                                 |       |     |   |     |

**B. “Since global warming Eskimos now have twenty different words for water.”  
(John O’Farrell) [16 points]**

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| <b>B</b>    | <i>Attribution science explains the link between climate change and particular extreme weather events, measuring how ongoing climate change affects certain extreme weather events. It highlights which events have been likely influenced by anthropogenic climate change and which ones have likely occurred due to natural climate variability.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |            |
| <b>B.1.</b> | For the following events, attribution scientists have all found an attribution link with climate change. Match the events in the table with the letters on the map in SB B.1. (A-J) and the number of the relevant descriptions below. Small details may be rather important!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | 8          |
|             | <i>Event</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>Letter</i> | <i>No.</i> |
|             | 1. Wildfires, 2019-20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |            |
|             | 2. Drought, 2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |            |
|             | 3. Storm, 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |            |
|             | 4. Typhoon, 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |            |
|             | 5. Extreme monsoon, 2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |            |
|             | 6. Floods, 2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |            |
|             | 7. Wildfires, 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |            |
|             | 8. Heatwave, 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |            |
|             | <p>1. Climate change was found to have made the intensity of the rainfall during this event around 50% more likely. The floods following the event affected at least 33 million people. Over 1,500 people lost their lives, while nearly 1.7 million homes and nearly 270 bridges were destroyed. 180,000 km<sup>2</sup> of cropland was destroyed, including 45% of cotton crop, one of the country’s key export crops.</p> <p>2. This event would have been almost impossible without climate change. The event led to diverse impacts from wildfires, permafrost thaw and pest invasion. It happened in the same year as the global COVID-19 outbreak.</p> <p>3. Climate change made the extreme rainfall during the event at least 67% more likely. Around USD 4 to 10 billion of insured losses that occurred during the event can be attributed to climate change. While the country places emphasis on protecting the population from several disasters, such as earthquakes, the event led to the death of at least 100 people.</p> <p>4. Climate change made the likelihood of this event at least 20 times more likely. The event has impacted shipping routes across the continent due to low water levels, threatening industrial production in an industrial heartland that relies heavily on riverine transport for raw materials. Agriculture and energy production were also among the heavily impacted sectors. The overall losses caused by the event across economic sectors were estimated to be at least USD 20 billion.</p> <p>5. The weather conditions that facilitated this extreme event were found to be 30% more likely due to climate change. At least 3 billion animals - many of which only live on this continent – were killed or displaced during the event.</p> <p>6. Climate change was found to have made the event 50 times more likely and 50% more intense. The floods following the event, partly caused by the rupture of dams, killed at least 4,300 people in a country (a fallen state) divided between two administrations. The effects were devastating because the region is usually extremely arid.</p> <p>7. Climate change was found to have doubled the likelihood of weather conditions influencing the occurrence of these extreme events. Across the entire country, nearly 18 million hectares were affected by these extreme phenomena, and as a consequence, around a third of the neighbouring country’s population was put on air quality alerts.</p> |               |            |

PW:

|             |                                                                                                                                                                                                                                                                                                                         |     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|             | 8. Climate change made the heavy rainfall that facilitated this event in a tri-border region between three countries 3-19% more likely. The event led to the loss of over 200 lives, although local authorities have carefully created plans for risk management, and well-equipped rescue teams are available as well. |     |
| <b>B.2.</b> | Besides extreme weather events, climate change also influences slow-onset events. Study map in SB at B.2!                                                                                                                                                                                                               | 0.5 |
| B.2.1.      | Which phenomenon is depicted on the map?                                                                                                                                                                                                                                                                                |     |
| B.2.2.      | Define the two ways in which climate change influences this phenomenon!                                                                                                                                                                                                                                                 | 1.0 |
|             |                                                                                                                                                                                                                                                                                                                         |     |
| B.2.3.      | Based on the map, name three regions affected extremely by this phenomenon                                                                                                                                                                                                                                              | 1.5 |
|             |                                                                                                                                                                                                                                                                                                                         |     |
|             |                                                                                                                                                                                                                                                                                                                         |     |
| B.2.4.      | With the same change in environment, social risks could be quite different. Select the region from your previous answer with the highest social risk. Justify your choice shortly!                                                                                                                                      | 2.0 |
|             |                                                                                                                                                                                                                                                                                                                         |     |
| B.2.5.      | Higher risk means higher costs – name three ways how this particular phenomenon (as in B.2.1.) increases the expenditures of the affected societies                                                                                                                                                                     | 3.0 |
|             |                                                                                                                                                                                                                                                                                                                         |     |
|             |                                                                                                                                                                                                                                                                                                                         |     |

**C. “Hot town, summer in the city/Back of my neck gettin' dirty and gritty”  
(Joe Cocker)**

**[18 points]**

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------|
| <b>C</b> | <i>Urban Heat Islands (UHI) is an effect of urbanisation, a positive anomaly in temperature caused by the particular conditions created in densely built areas</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   | points |
| C.1.     | Select the correct words!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   | 3.5    |
| C.1.1.   | An urban heat island (UHI) is a metropolitan area that is significantly <input type="checkbox"/> <b>warmer</b> / <input type="checkbox"/> <b>cooler</b> than its surroundings. According to the EPA, many cities experience air temperatures up to 10°F (5.6°C) <input type="checkbox"/> <b>warmer</b> / <input type="checkbox"/> <b>cooler</b> than the surrounding natural land cover. This temperature difference is typically more pronounced during the <input type="checkbox"/> <b>night</b> / <input type="checkbox"/> <b>day</b> than at the <input type="checkbox"/> <b>night</b> / <input type="checkbox"/> <b>day</b> and more significant in summer/winter than in <input type="checkbox"/> <b>summer</b> / <input type="checkbox"/> <b>winter</b> . It is most apparent when winds are <input type="checkbox"/> <b>weak</b> / <input type="checkbox"/> <b>strong</b> . The leading causes are changes in the land surface by urban development and waste heat generated by energy use. As population centres expand, they tend to alter larger land areas, leading to a corresponding <input type="checkbox"/> <b>increase</b> / <input type="checkbox"/> <b>decrease</b> in average temperature. |   |        |
| C.1.2.   | Simple choice. Mark the correct answer!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   | 4.0    |
| C.1.2.1. | How do cities contribute to the heat island effect?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |        |
|          | a. By generating heat through air conditioning, burning fossil fuels, and other similar occurrences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A |        |
|          | b. By reducing wind speeds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | B |        |
|          | c. By trapping heat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | C |        |
|          | d. All of the answers are correct                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | D |        |
| C.1.2.2. | How do asphalt and concrete contribute to urban heat island effects?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |        |
|          | a. By absorbing the sun's energy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A |        |
|          | b. By forcing the evaporation of water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | B |        |
|          | c. By providing shade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | C |        |
|          | d. By reflecting most of the sun's energy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | D |        |
| C.1.2.3. | Based on the figures (see C.1.2. in SB), which of the following has the highest impact on UHI reduction?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |        |
|          | a. Vegetation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A |        |
|          | b. Buildings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B |        |
|          | c. Water surfaces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | C |        |
|          | d. All of the above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | D |        |
| C.1.2.4. | What are the major impacts of UHIs?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |        |
|          | a. Increased energy consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A |        |
|          | b. Elevated emissions of air pollutants and greenhouse gases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B |        |
|          | c. Compromised human health and comfort                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C |        |
|          | d. All of the above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | D |        |

|          |                                                                                                                                                                                            |                          |                          |                          |     |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-----|
| C.2.     | Observe the figures in SB at C.2. about the cities of New York and Tirunelveli (India)                                                                                                     |                          |                          |                          |     |
| C.2.1.   | Can you identify any patterns connecting temperature and vegetation or land use? Please describe three of these connections.                                                               |                          |                          |                          | 3.0 |
|          | 1.                                                                                                                                                                                         |                          |                          |                          |     |
|          | 2.                                                                                                                                                                                         |                          |                          |                          |     |
|          | 3.                                                                                                                                                                                         |                          |                          |                          |     |
| C.3.     | Classify the factors of UHI into three categories!                                                                                                                                         |                          |                          |                          | 3.0 |
| C.3.1.   | <i>Factors</i>                                                                                                                                                                             | Fix                      | Modulator                | Manageable               |     |
|          | <i>City location</i><br>(climate, topography, rural surrounds)                                                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
|          | <i>City metabolism</i><br>(energy/water use, waste, emissions)                                                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
|          | <i>City size</i><br>(size, density of land use)                                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
|          | <i>Time</i><br>(day, season)                                                                                                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
|          | <i>City form</i><br>(materials and fabrics, structure, building cover)                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
|          | <i>Weather</i><br>(wind, cloudiness, temperature, radiation, etc.)                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |     |
| C.3.2.   | <i>Study pictures in SB (C.3.). These figures demonstrate one of EPA's (U.S. Environmental Protection Agency) recommendations for communities to invest in mitigating the UHI effects.</i> |                          |                          |                          |     |
| C.3.2.1. | Name the recommendation!                                                                                                                                                                   |                          |                          |                          | 0.5 |
|          |                                                                                                                                                                                            |                          |                          |                          |     |




PW:

|          |                                                                                                                                   |     |
|----------|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| C.3.2.2. | How does this affect the formation of the urban heat island, or how is it capable of mitigating its effects? Describe it shortly! | 1.0 |
|          |                                                                                                                                   |     |
| C.3.2.3. | What other recommendations could we make to reduce UHI? Name three potential actions for cities!                                  | 3.0 |
|          |                                                                                                                                   |     |
|          |                                                                                                                                   |     |
|          |                                                                                                                                   |     |

**D. “Human trafficking is an open wound on the body of contemporary society”  
(Pope Francis)**

**[22 points]**

| D.1.                | <p><b>Human trafficking</b>, also known as <i>trafficking in persons</i>, is a crime that involves compelling or coercing a person to provide labour or services or to engage in commercial sex acts. The coercion can be subtle or overt, physical or psychological. Exploitation of a minor for commercial sex is human trafficking, regardless of whether any form of force, fraud, or coercion was used.</p> <p>UN’s Sustainable Development Goals also target to end human trafficking. In order, a report was created during the last decades, to learn challenges and ease them properly. The <i>Global Report on Trafficking in Persons</i> provides global and regional data and evaluation of the means, volumes, and forms of human trafficking. In the following task, you will study sources and answer questions about human trafficking.</p>                                                                         |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|--------------------------------|--|--|--|--|--|--|--|--|--|--|
| D.1.1.              | Study source D.1.1. in the SB. According to the map, name three countries which were safe according to the number of human trafficking victims.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.5  |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
| D.1.2.              | List three countries which were extremely dangerous during 2021.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.5  |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
| D.1.3.              | <p>Study the map and the chart in SB (D.1.1., D.1.3.). List three countries where the map and the chart depict contradictory results. Explain shortly the possible reasons for contradiction according to your knowledge.</p> <table border="1" data-bbox="225 1256 1476 1809"> <thead> <tr> <th data-bbox="225 1256 619 1323">Name of the country</th> <th data-bbox="619 1256 1362 1323">Possible reason, argumentation</th> <th data-bbox="1362 1256 1476 1323"></th> </tr> </thead> <tbody> <tr> <td data-bbox="225 1323 619 1489"></td> <td data-bbox="619 1323 1362 1489"></td> <td data-bbox="1362 1323 1476 1489"></td> </tr> <tr> <td data-bbox="225 1489 619 1655"></td> <td data-bbox="619 1489 1362 1655"></td> <td data-bbox="1362 1489 1476 1655"></td> </tr> <tr> <td data-bbox="225 1655 619 1809"></td> <td data-bbox="619 1655 1362 1809"></td> <td data-bbox="1362 1655 1476 1809"></td> </tr> </tbody> </table> |      | Name of the country | Possible reason, argumentation |  |  |  |  |  |  |  |  |  |  |
| Name of the country | Possible reason, argumentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
| D.2.                | <p>Study table D.2. in SB. Use the data provided and draw a thematic map which depicts regional trends in human trafficking. Use labels, colours, icons, or any visual methods that express regional differences. Use the blank map below. Create your thematic map on the next page using the outline map provided. <b>Please note you do not need to use every data; select three categories for every region!</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |                     |                                |  |  |  |  |  |  |  |  |  |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10.0 |                     |                                |  |  |  |  |  |  |  |  |  |  |

|      |                                                                                                                                                                           |     |   |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| D.3. | Study your own map and sources D.3.-D.5. in SB. Decide whether the following statements are true (T) or false (F).                                                        | 3.0 |   |
|      | A general decrease in the number of female victims was experienced globally because fewer cases have occurred due to sexual exploitation since 2007.                      | T   | F |
|      | A significant increase in female forced labour was visible in South Asia from 2019 to 2020 because the form of exploitation requires female trafficking.                  | T   | F |
|      | Although the occurrence of domestic human trafficking in South Asia decreased by a high percentage, 9 out of 10 cases are still domestic trafficking cases in the region. | T   | F |
|      | The highest number of detected victims globally was experienced in South Asia.                                                                                            | T   | F |
|      | The main difference between South Asia and East Asia is the fact that the trafficking of male victims in South Asia is more frequent.                                     | T   | F |
|      | The number of persons convicted of human trafficking decreased in South Asia because, generally, the number of detected cases has decreased.                              | T   | F |
| D.2. |                                                                                        |     |   |
|      | Create legend here                                                                                                                                                        |     |   |
|      |                                                                                                                                                                           |     |   |

**E. “Suburbia is where the developer bulldozes out the trees, then names the streets after them” (William E. Vaughan) [18 points]**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>E</b>      | <i>For almost a century, suburbanisation has become the most impressive spatial development trend in the United States. Hundreds of books, TV shows, and great movies (like “American Beauty” or “Truman Show”) depict and sometimes draw attention to the contradictions of suburban life. After the turn of the Millennium, some new trends emerged, and the picture of the idyllic suburban life changed.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |
| <b>E.1.</b>   | <p>How it began... Levittown in Pennsylvania has been among the first planned US suburbs, founded in 1952. Study pictures in SB (E.1.1-3) and give four items, why suburbs became so successful in the 1950s and 1960s!</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.0 |
| <b>E.2.</b>   | A new trend has emerged in the American suburbs in the last decades. Find out more by filling in the text with the missing words below!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 6.0 |
| <b>E.2.1.</b> | <p>There is no word more -- <input type="checkbox"/> -- in the urban vernacular than "suburb." For most of us, those two syllables conjure a very specific type of place, with a specific kind of people comfortably living there. "We think about suburbs in one way," says Elizabeth Kneebone, a fellow at the Brookings Institution's Metropolitan Policy Program. "We have a very stereotypical view of suburbs as-- <input type="checkbox"/> --, affluent, Leave-It-To-Beaver type places." And yet, over the last decade, suburbs have increasingly become home to America's poor. Between 2000 and 2011, the population living in American cities --- <input type="checkbox"/> --the poverty line increased by 29 percent. During that same time, across the country in the suburbs of metropolitan areas as diverse as Atlanta and Detroit and Salt Lake City, the ranks of the -- <input type="checkbox"/> --- grew by 64 percent. Today, more poor people live in the suburbs (16.4 million of them) than in U.S. cities (13.4 million), despite the --- <input type="checkbox"/> ----that poverty remains a uniquely ---- <input type="checkbox"/> ----problem. As Kneebone and colleague Alan Berube have written before for Cities, this geographic shift has been</p> |     |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |                                                                         |  |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------|--|
|               | <p>no quirk of the----<input type="checkbox"/>---It began before the ---<input type="checkbox"/>---crashed, and will inevitably tax communities unaccustomed to housing the poor well into and beyond the recovery. The changing shape of poverty is more ---<input type="checkbox"/>---than an economic downturn. "Often when we talk about rising ----<input type="checkbox"/>---poverty, people automatically think about, 'Well, who's moving into these neighborhoods?'" Kneebone says. "But it's not just people moving in. There have been two downturns in the last decade, and long-running structural changes in the economy, finding a lot of ----<input type="checkbox"/>----suburban residents growing poorer, ----<input type="checkbox"/>----the economic ladder."</p> |                                                                       |                                                                         |  |
|               | <p>1. below<br/>2. evocative<br/>3. housing market<br/>4. long-time</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>5. middle-class<br/>6. perception<br/>7. poor<br/>8. recession</p> | <p>9. slipping down<br/>10. suburban<br/>11. systemic<br/>12. urban</p> |  |
| <p>E.3.</p>   | <p>Study map and chart in SB at E.3!</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       |                                                                         |  |
| <p>E.3.1.</p> | <p>Suburban poverty does not have an equal impact in the entire United States. Give four relevant statements describing the pattern of suburban poverty in the country!</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>4.0</p>                                                            |                                                                         |  |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |                                                                         |  |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |                                                                         |  |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |                                                                         |  |
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |                                                                         |  |

PW:

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |   |   |   |  |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---|---|--|
| E.4. | <p>Maps in SB E4 show patterns of poverty in the San Francisco Metropolitan Area (Bay Area). Study maps, and do not forget the other sources that were given earlier to task E.</p> <p>Mark A – If both statements are true, it is a casual relation by its justification.</p> <p>Mark B – If the statement is true, but it has no causal relation with the justification.</p> <p>Mark C – If the statement is not true, but the justification itself could be true.</p> <p>Mark D – If the statement is not true, and justification follows a false logic.</p> <p>(we <b>highlighted</b> the border between the two parts of the statements)</p> | 4.0 |   |   |   |  |
| 1.   | The growth of poverty rates appears in every suburb around the Bay <b>because</b> there is an overall growth in the number of poor people in the USA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | A   | B | C | D |  |
| 2.   | Suburbanisation of poverty gives a new scale to social segregation <b>because</b> it creates a pattern of poor and rich suburbs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A   | B | C | D |  |
| 3.   | Poverty rates in suburbs only grow in less favourable locations because the generation of the Millennials and Generation Z start their own adult life later than the Baby Boomers and Gen. X.                                                                                                                                                                                                                                                                                                                                                                                                                                                     | A   | B | C | D |  |
| 4.   | The growing poverty in suburbs happens exclusively because of the decline of the middle classes <b>since</b> current generations are no longer able to pay the costs of higher education.                                                                                                                                                                                                                                                                                                                                                                                                                                                         | A   | B | C | D |  |
| 5.   | Working-class minorities are under-represented in these quickly declining communities because suburbs used to be racially segregated in the 1960s and 70s.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A   | B | C | D |  |
| 6.   | The city of San Francisco, as the Metropolitan area's core, has a declining poverty rate because gentrification results in the moving of highly qualified young adults to the downtown area.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A   | B | C | D |  |
| 7.   | The concentration of poor people in the suburbs challenges the social system because the ecological costs of the suburban lifestyle are high.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | A   | B | C | D |  |
| 8.   | Lower-status people may be trapped in the suburbs <b>because</b> they have limited access to public transit, and therefore their job opportunities are poor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A   | B | C | D |  |

**F. “A mathematician is a device for turning coffee into theorems.” (Pál Erdős)  
[22 points]**

|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------|
| <b>F</b>    | <i>Wheat, soybeans, corn and rice may be humanity's most important agricultural products, but the world will not roll without some inspiration to the body &amp; mind. Coffee is a possible and globally legal solution.</i>                                                                                                |                  | points |
| <b>F.1.</b> | Look at the pictures at F.1.1-5. in SB! Pair the global production maps of one of these products!                                                                                                                                                                                                                           | <i>No. in SB</i> | 2.0    |
| F.1.1.      | Cocoa beans                                                                                                                                                                                                                                                                                                                 |                  |        |
|             | Coffee                                                                                                                                                                                                                                                                                                                      |                  |        |
|             | Pineapple                                                                                                                                                                                                                                                                                                                   |                  |        |
|             | Tea                                                                                                                                                                                                                                                                                                                         |                  |        |
| F.1.2.      | One of the maps remained unpaired – what is the unusual agricultural product it depicts?                                                                                                                                                                                                                                    |                  | 1.0    |
| <b>F.2.</b> | Study the table in the SB at F.2. Coffee production and export have different significance in the affected countries.                                                                                                                                                                                                       |                  |        |
| F.2.1.      | Create a diagram to show the significance of the coffee business in the countries listed. Use two different data for every country! Make your calculations in the empty papers in the SB (you do not need to submit them) and draw your chart here (next page). Take care of details and clear, transparent representation! |                  | 9.0    |
| F.2.2.      | Based on your chart, which two countries would you name as the most dependent economies on the coffee business?                                                                                                                                                                                                             |                  | 1.0    |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
| F.2.3.      | There are countries listed with no own raw coffee production, but significant share from world coffee export. How could you explain it?                                                                                                                                                                                     |                  | 2.0    |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
| F.2.4.      | Coffee-dependent countries – like other resource-oriented economies – have to face some challenges. What are the typical problems for such economies? Name three!                                                                                                                                                           |                  | 3.0    |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |
|             |                                                                                                                                                                                                                                                                                                                             |                  |        |

PW:

Draw your chart here!

|        |                                                                                                                                                                                              |     |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| F.3.1. | Study pictures and the map in SB F.3.! All are related to the coffee sector of Ethiopia, where the coffee originates. Give four items that may be characteristic of local coffee production! | 4.0 |
|        |                                                                                                                                                                                              |     |
|        |                                                                                                                                                                                              |     |
|        |                                                                                                                                                                                              |     |
|        |                                                                                                                                                                                              |     |



PW: