

11<sup>th</sup> Hungarian Geographical Contest 2019/20

2<sup>nd</sup> Round

## Written Test

### Question and Answer Booklet

30 November, 2019

Password: .....

Date of birth: .....

*Please note, that the answers indicated this sample are the most typical/most common ones, and do not necessarily cover all the possible (good) solutions.*

**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 different maximum value:

A	18
B	18
C	18
D	20
E	22
F	24

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, ruler and pencils during the test.
8. You have a total of 180 minutes to answer all questions.

**Good luck!**

## Section A - Millennium Development Goals (MDGs)

[18 points]

Read the article in the Source Booklet Section A.

The United Nations Millennium Development Goals aim to reduce global poverty by the year 2015. This micro-loans project helps to achieve those goals.

A.1. On the list below underline three targets of the MDGs that are targeted by this project. [3]

- A global partnership for development
- Achieve universal primary education
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability
- Eradicate extreme poverty and hunger
- Improve maternal health
- Promote gender equality and empower women

A.2. Why women should receive in Burkina Faso a micro-loan? [2]

Status of women in the community improves.

The target is to eliminate gender disparities in education.

Children learn from their mothers so learning about finance is given to the next generation.

It gives them hope and they start to save money.

A.3. Give four activities for which women might use micro-loans. [4]

1. Food production

2. Small manufacturing

3. To buy cattle or sheep

4. To repair a house

5. To buy small tools

A.4. Circle three countries where the use of micro-loans could be a way to achieve the Millennium Development Goals. [3]

<u>Bangladesh</u>	Kuwait	Canada
<u>Nicaragua</u>	Germany	<u>Sudan</u>

PW:

Give a short explanation of your choice. What are those development issues, which the micro-loans could handle especially in these countries? [3]

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Country 1 and explanation: Sudan: equal rights for women (or any other valid answer)

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Country 2 and explanation: Nicaragua: erasing or decreasing crime and abuse against women and children (or any other valid answer)

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Country 3 and explanation: Bangladesh: erasing or decreasing child work, empowering children to choose education (or any other valid answer)

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A.5. Which three countries from the table above have a lot of migrant workers? Give a specific reason for each of the chosen countries. [3]

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Country 1 and reason: Canada is a prosperous country in need of low skilled workers.

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Country 2 and reason: Germany is a country with an ageing population in need of all kind of workers.

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Country 3 and reason: Workers in either of these countries do not want to do manual work.

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Kuwait is a very small, rich and sparsely populated country in need of workers for the oil industry and for domestic work.

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## Section B – Water scarcity in India

[18 points]

According to a 2018 report released by the National Institution for Transforming India, a governmental policy “think tank”, India is facing its worst water crisis in history: demand for potable water will outstrip supply by 2030 if steps are not taken. Nearly 600 million Indians are affected by high to extreme water stress and about 200,000 people have died annually due to inadequate access to safe water. 21% of the country’s diseases are water related with only 33% of the country having access to traditional sanitation. Twenty-one metropolises including Delhi, Bengaluru, Chennai and Hyderabad will run out of ground water by 2020, touching 100 million inhabitants. If matters are to continue, there will be a 6% loss in the country’s GDP by 2050 (*Composite Water Management Index* by NITI Aayog, 2018 June).

B.1. Read the text above and define the term ‘water scarcity’ taking into account its two kinds of interpretation. [2]

Two possible interpretations of water scarcity are the absolute and relative lack of water. The former one means that there is not enough water (quantitative or physical shortage), the latter one means that there is not enough water suitable for human consumption or utilization (qualitative shortage).

B.2. Relying on India’s physical and human geographical characteristics give three possible explanations on water crisis existing in the country. [3]

Explanation 1: Water supply cannot keep up with population increase in general.

Explanation 2: India is a rapidly growing economy with extensive production demanding more and more fresh water for irrigation and industrial commodity. Overexploitation of water reserves.

Explanation 3: Because of tropical monsoon climate the country’s rainwater supply has an extreme seasonality: except of intensive summer rainfalls, it is mostly arid having negligible amount of precipitation. Furthermore monsoon is occasionally late, irregular or missing, which might increase drought.

Explanation 4: Water storage facilities providing fresh water for droughty periods are not adequately worked up. Generally the definitely poor water management infrastructure and regulations.

Explanation 5: Clean piped water and sewage disposal access is not provided for a huge part of India’s population because of low standards of living. Therefore getting potable water in lots of cases are difficult and possible only in a limited extent.

Explanation 6: Water cleaning infrastructure and legal regulations of this activity does not exist

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in fact. Polluted wastewater and sewage from domestic, agricultural or industrial resources get into ground and surface water reserves back predominantly without any cleaning or disposal.

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B.3. Study Source Booklet Figure B.1: Flooded countryside in India & Figure B.2: Droughty landscape in India.

B.3.1. Which typical climatic phenomenon in India can be associated with environmental conditions imaged by the figures? [1]

Tropical monsoon.

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B.3.2. What is the physical background of it, and how does it influence water security of the country? [4]

Different length of lands' and oceans' warming time; lands are getting warmed sooner; the thermal equator moves northwards in the summer of the Northern Hemisphere; it represents the line of warmest spots and lowest atmospheric depression; the south-eastern trade winds blow towards it but crossing over the geographical Equator turn to north-eastern direction due to the Coriolis force conveying humid air masses over the Indian subcontinent that cause intensive raining in the summer (May/June to September); except of areas influenced by winter monsoon remaining periods of the year are predominantly arid or draughty; failing adequate storage of water falling in the summer or in case of any irregularity of monsoon winds causing rainfall shortage affects water security.

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B.4. Look at Source Booklet Figures B.3: Sagar Pond in Alwar, Rajasthan, India & Figure B.4: Water engineering improvements in India.

B4.1. What is the most obvious solution historically, as well as contemporarily to water scarcity? [1]

Building up different kind of facilities to collect and store rainwater falling in the monsoon period to utilize it in dry seasons of the year.

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B.4.2. Specify three possible environmental or human benefits of this method. [3]

Benefit 1: Possibility of water supply more continuous in time and more balanced spatially.

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Benefit 2: Providing clean(ed), monitored quality water to domestic and agricultural purposes, confining spread of diseases.

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Benefit 3: Means of rural/regional development, job creation.

Benefit 4: Collecting water from quick surface runoff, so mitigating physical damages of landslides and floods.

Benefit 5: Moderating measure of groundwater reserves' decrease, to help regeneration of wells.

Benefit 6: Growing areas of wetland habitats/ecosystems, nature/wildlife protection, conservation (acceptable).

B.5. Study Source Booklet Figures B.5.: Basic water facts of India & Figure B.6.: Wells in bad health and decide on whether the following statements are true or false. [4]

B.5.1. India's per capita water resource is around half of the global average.	False
B.5.2. The main reason of water scarcity in India is the overexploitation of surface water.	False
B.5.3. More than 50% of groundwater availability of India is consumed annually.	True
B.5.4. Two-thirds of exploited groundwater are put to use for irrigation.	True
B.5.5. Amount of renewable groundwater in the State of Gujarat is more than exploitation.	True
B.5.6. Overexploitation of groundwater can cause land subsidence.	True
B.5.7. Because of severely polluted rivers 40% of India's drinking water is drawn through desalination of sea water.	False
B.5.8. Majority of wells in India has water level below the average value of the 2007–2016 period.	True

## Section C – War on Pacific

[18 points]

During World War II, the Pacific was an enormous and unconventional theatre. Both US and Japan naval and air forces are challenged by the distances: the operational area was often so big, that despite all the efforts taken in reconnaissance, opponent forces could hardly find each other. As it happened at the battle of Midway (see the movie in cinemas soon...), the advantage was on that side which was able to navigate more accurately and reveal the enemy's position first...

Study Figure C.1. in Source Booklet. A copy of the map is given here in Written Test. You have to give some answers drawing them on the map, please take care to add your answers in the Written Test greyscale map on page 10.

March 21, 1942 - Japanese fleet manoeuvres

C.1. At 4:15 a.m. (local time), the US intelligence deciphered a message that the Imperial Japanese Navy aircraft carrier "AKAGI" had been fuelled at the intersection of  $145^{\circ}$  E and the Equator and immediately headed towards the compass point of  $270^{\circ}$  at a maximum speed of 58 km/h. Mark (with "A") on the map below where the ship was in 15 hours! What time was it when the carrier arrived there (according to time zones)? [4]

Do your calculations here.

towards  $270^{\circ}$ =West

$t=s*v=58*15=870$  km (use the scale bar for measurement)

4:15 a.m. +15h= 7:15 p.m. 7:15 p.m. - 1h (from UTC+10 to UTC+9)= 6:15 p.m.

C.2. An American SBC Helldiver scout bomber caught sight of the IJN "KAGA" aircraft carrier, which was stationed at the north-eastern tip of an island. What is interesting about this island is that today two states exist on it, one belonged to the Portugal Empire and the other was a Dutch colony. Later the larger state conquered the smaller one, which only gained independence in the 21st century. What is the current name of the smaller state? Mark KAGA's position on the map with "B". [1.5]

East-Timor (Timor-Leste)

C.3. The IJN HIRYŪ aircraft carrier was under repair and was at a stand for several days. The crew of a USS submarine, which lurks next to the carrier sent a report of the aircraft carrier's location at 1:10 p.m. local time, but because their equipment malfunctioned, they could only inform about the local time and also about their observation that at midday the Sun was seen  $80^{\circ}$  above the northern horizon. The USS ENTERPRISE's (position marked with a red cross on the map) crew received the report immediately, at 12:34 p.m. local time. Mark (with "C") on the map where HIRYŪ was. [3]

Do your calculations here.

$80^{\circ}$  above the northern horizon=>  $90^{\circ}-80^{\circ}=10^{\circ}$  South

Time difference between 12:34 p.m. and 1:10 p.m is 36 minutes=> the carrier is to the east



PW:

1 meridian=4 minutes in local time=>  $36/4=9$  meridians=>  $135^{\circ}+9^{\circ}=144^{\circ}$

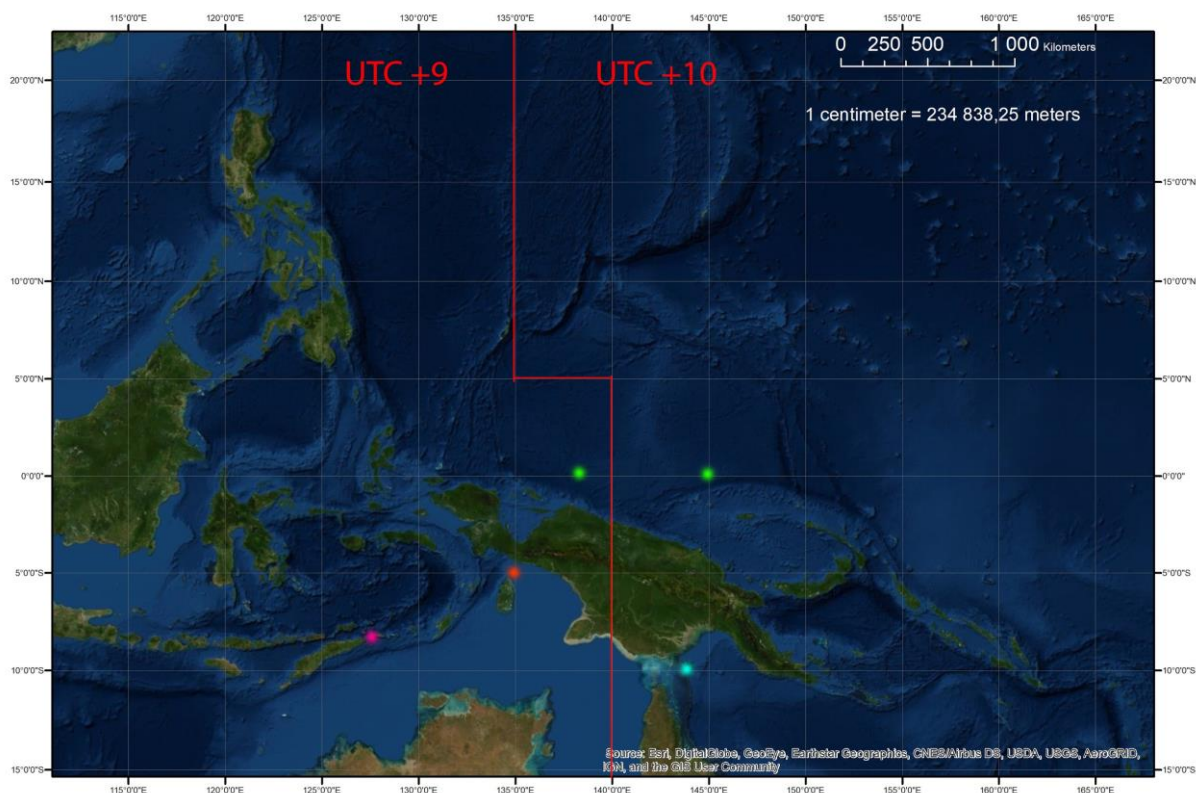
C.4. At 8:00 pm, the SBD Dauntless dive bombers took off from the USS ENTERPRISE carrier and aimed at the three Japanese carriers in three squadrons, each with a separate target. How many enemy carriers could be bombarded if the maximum range of action is 1000 km?

Do your calculations here.

[3]

Using the scale bar on the map and with the help of a ruler or a divider draw a circle (the centre is the USS Enterprise) with a radius of 1,000 km.

The AKAGI and the KAGA is located inside the circle=> 2 carriers could be bombarded



Red dot: USS Enterprise

Green dots: AKAGI, the eastern dot is its starting position, and the western dot is its location after 15 hours.

Pink dot: KAGA

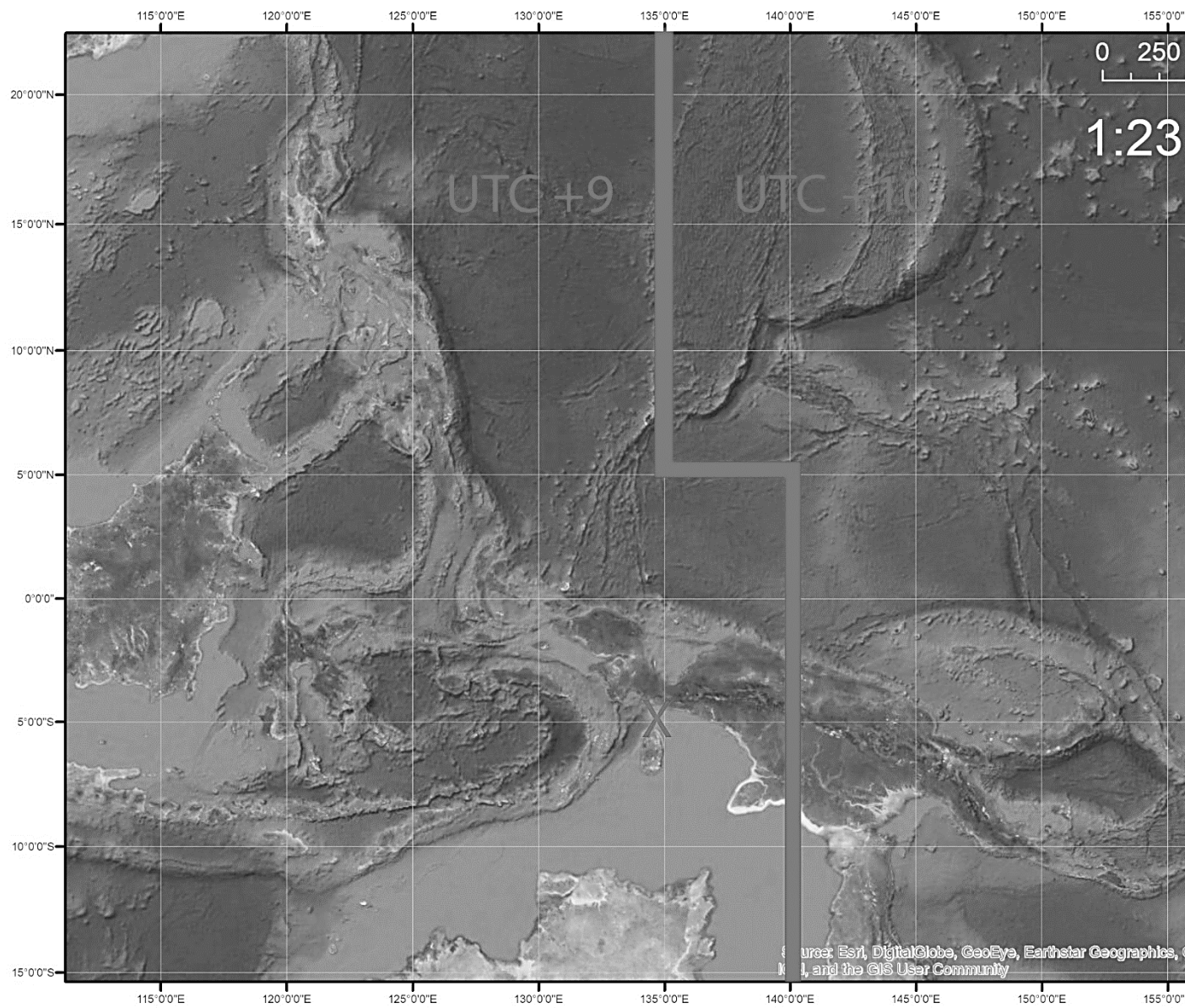
Blue dot: HIRYŪ

PW:

C.5. Today, the Pacific region shows a much more peaceful face to the world. Anyway, countries here have clearly different origin, and have to face different challenges. In this task, you have to choose the country or the countries, which fit to the statements. We marked the statements with a \* symbol, where more than one right answer is to be given. [6.5]

	Philippines	Papua New Guinea	Indonesia	Brunei
C.5.1. The country was seriously affected by the 2004 Boxing Day Tsunami			X	
C.5.2. The form of the government is some kind of a monarchy*		X		X
C.5.3. Observer member of the ASEAN		X		
C.5.4. The dominant religion is Christianity*	X	X		
C.5.5. The country's most important import partner is not China		X		
C.5.6. The main export commodities are mineral fuels*		X	X	X
C.5.7. The urbanization rate is above 50%*			X	X
C.5.8. The country has a large diaspora (in the top global 10)	X			

PW:



## Section D - Urban regeneration in the Polish Manchester

To be “The Manchester” of a country means that a city once had an extremely rapid growth period in its history and its economy was once based on textile industry. The Polish one, called Łódź [wutɕ] is located almost exactly in the middle of the contemporary country, and despite its serious shrinking, is still the 3rd largest city in Poland. Although it is not a typical touristic destination, for geographer’s eyes there are so much to discover in this city being rich in heritage of the late 19th and early 20th century.

D.1. Study population data in Figure D.1. in Source Booklet.

D.1.1. In which period was relative annual population growth the highest? [1]

Between 1850 and 1872 the population multiplied almost 7 times, which means a yearly +35% growth average.

D.1.2. In which period was relative annual population decline the most intensive? [1]

Between 1915 and 1921 the yearly decline reached 3.8%, slightly more, than in the WW2 years (3.7%). Both answers were accepted.

D.1.3. There are three periods of population decline to be identified in the table, but reasons for shrinkage may differ in these periods. Give four possible reasons of Łódź’s population loss, and to each reason, name one or more of the three stages (marked with 1; 2 and 3 from the earliest to the latest), which could cause shrinking. [4]

Reason of population loss	Periods connected		
D.1.3.1. War casualties	<u>1</u>	<u>2</u>	3
D.1.3.2. Political troubles, border changes, dissolve of Russian Empire	<u>1</u>	2	3
D.1.3.3. Deportation and mass murder of the Jewish population	1	<u>2</u>	3
D.1.3.4. Economic decline, natural decrease, outmigration	1	2	<u>3</u>

spanish flu (1), suburbanisation (3), migration overseas



There were two enormous textile industry complexes in the city, each with different types of factories, supporting facilities (power houses etc.), connecting residential districts for the workers and social institutions. The larger is located south from the city centre, and its eastern edge is called the Księży Młyn (Pastor's Mill), a well-preserved late 19th century industrial heritage site. The total former industrial zone (see maps in SB) was much larger, and covered an area of 150 hectares in the peak years. Some areas have already gained different functions during the last 40 years, but still, there are sites of possible actions of urban regeneration.

D. 2. Study maps and photos D.2.-D.7. in Source Booklet and answer the questions.

D.2.1. What kind of new functions have been introduced as the results of rehabilitation? Give five examples. [2.5]

1. Loft apartments, residential functions

2. Offices

3. Logistic functions, stores etc.

4. Incubator, new SMEs, art and culture, cultural economy etc.

5. Parks, green surfaces, blue surfaces, sport fields etc.

D.2.2. During the rehabilitation, planners have to face some challenges which make these types of projects more complicated than green field investments. Give three examples of possible difficulties/conflicts. [3]

1. Environment (soil) is probably polluted, contamination

2. Property rights may be confused

3. Some old buildings may have heritage protection, new functions must fit to old forms and structures

(Extra: construction noise and turmoil, land may too expensive, old technologies in building.)

D.2.3. Of course, urban rehabilitation projects could have positive effects in many different ways to the city. Which can be the (desired) benefits of this large-scale and long-term program in Łódź? Give four potential benefits. [2]

1. More attractive residential areas are created, gentrification happens

2. Favourable locations are created for local enterprises

3. New touristic attractions are created

4. City image is improving by healing "urban wounds" and protecting built heritage

Extra: reduce commuting, growing biodiversity/green area ratio, create new sub-pole in city development.

D.3. Urban rehabilitation projects are often connected – even in this case in Łódź – with gentrification. But what is exactly gentrification? Read the following text, complete it with the expressions given. Answer with the numbers! [6.5]

- |                                  |                               |                 |
|----------------------------------|-------------------------------|-----------------|
| 1. accelerated                   | 6. commutes                   | 11. park spaces |
| 2. back-to-the city movement     | 7. housing values and rents   | 12. took off    |
| 3. central business district     | 8. median incomes             | 13. workplaces  |
| 4. central recreational district | 9. neighbourhoods             |                 |
| 5. college graduates             | 10. New York's High Line park |                 |

Most urbanists and economists have long thought that gentrification is driven, in large part, by the desire of more affluent and educated people to reduce their [6] commutes and be close to the offices and workplaces of the central business district [3].

But it is becoming increasingly apparent that more is at work. Gentrification is also driven by a desire to be close to unique urban amenities like restaurants, galleries, museums, or even fitness facilities. In cities, gentrification is associated less with proximity to the workplaces [13] of the central business district and more with the desire to access the amenities park spaces [11] of what has been dubbed the central recreational districts [4]. The pricey condo and office towers that line New York's High Line park [10] stand as physical exemplars of just this.

Now, a study by Alessandro Rigolon of the University of Utah and Jeremy Németh of the University of Colorado takes a close look at the role of urban parks and green spaces in gentrification. Published in the journal Urban Studies, their research unpacks the roles of several elements of parks in gentrification.

The study covers 10 cities (not metros) in different regions of the country. It tracks the role of parks in the gentrification of the cities over 15 years, from 2000 to 2015, a period during which the back-to-the city movement [2] accelerated [1] gentrification. It breaks this longer time frame into two shorter periods—2000-2008, before the crisis, and 2008-2015, after the crisis, when gentrification took off [12] even more.

The study pegs gentrifying neighbourhoods [9] in these cities with a fairly standard definition that tracks changes in median income, housing values and rents, [7] and college graduates [5]. The authors dub neighbourhoods or census tracts that start out with median incomes [8] lower than that of the city as “gentrification-eligible.” Under this definition, about half the tracts in these cities were gentrification-eligible in the year 2000 (ranging from 43 percent in Seattle to 56 percent in Chicago). About a tenth to more than a quarter of these gentrification-eligible neighbourhoods actually gentrified, depending on the city, from a low of 12 percent in Houston to a high of 27 percent in Denver.

PW:

[source: <https://www.citylab.com/life/2019/10/urban-parks-gentrification-city-green-space-displacement/599722/>]

SAMPLE

## Section E – Weather forecast: Tropical storm

[22 points]

E.1. Study Figure E.1. – E.4. in Source Booklet and answer the questions below.

E.1.1. How has tropical storm activity in the past more than 30 years been changed?

[1]

The number and the frequency has increased.

E.1.2. Why tropical storms striking time by time land areas in the North-Atlantic? Explain first how tropical storms are formed, then explain the reason for their roots!

[4]

How a tropical storm is formed:

Warm sea surface, increasing evaporation, high energy, quick rising, tropical storms are formed

Tracks of tropical storms are like this, because:

Due to the differences in air pressure

Due to the winds

As entering the land, due to pressure and temperature change slows down OR due to Coriolis-effect and Earth rotation

E.2. Study Figure E.5. in Source Booklet. Some data of the costliest hurricanes are given in the table. Your task here is to create a chart with a yearly resolution using the data in Figure E.5. Your chart has to include at least two variables, so a combined type should be the better choice! It has to depict changes of the tropical storm activity. The chart must be comprehensive, please, do your best that anybody would understand it!

[8]

Do you calculations here. Draw your chart on the next page.

Aspects we admired correcting the charts:

The complexity of the chart. We gave more marks for those charts, which depicted 2, even 3 elements of the information given in SB (intensity, frequency, costs for example).

We also admired the esthetical look of the charts, but if the content was good, but the drawing was weaker, we did not give negative marks.

It was important to understand easily, what the chart tries to show us. Using a legend, or giving clear names for the axes resulted more marks.



E.2.1. Draw your chart here.



E.3. Study Figures E.8. and E.9. in Source Booklet. What does risk management mean? Discuss what the most important elements of risk management are, which could save lives in case of disasters. Please consider different stakeholders and explain their role. [4]

Risk management: strategy how to react on a disaster and how to protect more lives in case.

Important elements: preparation, intervention and reconstruction, evaluating the loss, measuring environmental data.

Stakeholders: the state, the local leadership, NGO-s, education institutions, researchers, data analysers etc. (other valid answers)

Reading the content of the source from SB.

PW:

E.4. Coastlines could be dangerous places of living, although people often choose them as their place of living. Study Figure E.6. in Source Booklet and discuss, what the main reasons for the density of South Eastern US coasts comparing with the Mid-Western States are. [5]

Comparing the population density between South-Eastern coastline and Mid-Western America

and discussing the causes: geographical background, climate, economy, transport

opportunities, social aspects (community).

Revealing the advantages of living on the South-Eastern coastlines instead of living

in the Mid-Western America.

Highlighting some inland trends of migration processes in the USA. Arguing why is it more comfortable/favourable/beneficial to choose the South-Eastern coastline.

Any other valid answers, which tend to compare and discuss the main question.

## Section F – Out of Africa

[24 points]

Since the satellite imaging provides good sources, the analysis of land cover is widely used for monitoring long-term processes for local, regional, national or even global level. Developing countries recently have faced multiple transformation, like population boom, urbanisation and in most of the cases, climate change. In Africa, where ecological balance is often highly fragile, changes in land cover can indicate serious problems.

F.1. Study map F.1. in SB, which shows the dominant land cover types of Kenya in 2001 and 2012.

F.1.1. In the area marked “A” and with a blue rectangle in the map, you see a diagram summarising the changes of the four major land cover types. Study the two maps and diagrams of the climatic zones in both corners. Find out, which types are marked 1-4 by the diagram. [4]

1. Open shrublands

2. Grasslands

3. Croplands

4. Savannas

F.1.2. Study once again the maps and graphs. Climatic zones are indicated in the map and the graph too. Which are the two zones from the seven with the largest and the smallest changes? [2]

Most transforming zone 1 / zone 7

Least transforming zone 3 or zone 4

F.2. Look at the whole picture. The transformation of the land cover reflects different impacts of natural and human causes. Give three possible causes, which justify one or more element of the transformation. [6]

Type of transformation	Reason
F.2.1. Growing croplands in savannas and other types	Population increase and economic growth increase the demand for agricultural land, more areas are cultivated.

F.2.2. Growing shrublands	Overused and abandoned agricultural lands often turns to shrubland in semiarid and arid climate. Raising goats prevents area from reforestation.
F.2.3. Decreasing grasslands	The original land cover form of this climate zone is decreasing because of several reasons: desertification by climate change and overuse of biological production, growing built up areas etc.

F.3. Study the ethnic map at F.3. in Source Booklet. Compare it with the land cover map.

F.3.1. Which ethnic tribes live on the area, where the land cover change is the most intensive? [1]

Luhya (Luo, Kisii is also acceptable)

F.3.2. The geographical environment determines the traditional way of life certain tribes and ethnic groups. Name three tribes from the map, and give the possible way of their traditional economic activity. [3]

	Group/tribe	Form of agriculture
1	Somali	Nomadic, animal husbandry
2	Masaai	Animal husbandry
3	Kikuyu, Kamba	Crop farming

F.4. Agriculture still plays very important role in the economy of African countries. However, there is lot of conflicts about land use, land protection, increasing agricultural production and rural employment. Highlight four possible problems/contradictions, which are typical for agricultural sectors of developing countries. [8]

F.4.1.

Traditional agriculture has low productivity.

PW:

F.4.2.

Natural resources, climate change, adaptation.

F.4.3.

Monoculture farming destroys ecosystem.

F.4.4.

Usage of GMO-corps, ethical questions, dependency from expensive import goods.

THE END