

14th Hungarian Geographical Contest 2022/23

2nd Round

Written Test

Question and Answer Booklet

27 January 2023

Password:

Date of birth:



KULTURÁLIS ÉS INNOVÁCIÓS
MINISZTERIUM



Nemzeti
Tehetség Program



Modern
Geográfus
Alapítvány
Pécs 2004

Földtudományi
Intézet
Földrajzi és
PTE TTK 1998



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 **140 points**. Each section has a different maximum value:

A	20
B	24
C	24
D	24
E	24
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, a ruler, crayons, and pencils during the test.
8. You have a total of 180 minutes to answer all questions.

Good luck!

A. Hot topic [20 marks]

The impacts of climate change have been observed all around the world. For example, the mean global temperature has already risen by 1.1°C since 1880. This makes it important not only to mitigate climate change by reducing greenhouse gas emissions, but also quantifying the impacts of the observed and expected climate change, in order to conceptualizing adaptation measures to climate change.

In the following case studies, we invite you to think about the potential climate adaptation measures based on observed and expected climate change impacts. An adaptation measure may mean for example planting drought resistant crops, as droughts are likely to become more common in certain areas due to climate change.

A.1. GERMANY

A.1.1. Study maps at A.1. in Source Booklet (SB). What trends are observed? (Mention two key characteristics and use examples to demonstrate your observations.) [2 marks]

1.

2.

A.1.2. What health impacts does the increased number of hot days might have? [2 marks]

A.1.3. Explain, why hot days could heavily impact the residents of Germany? [2 marks]

A.2. INDONESIA

A.2.1. Study the graphs and the text in the box at A.2. in SB. Describe in 2-3 sentences, how precipitation and temperature will change in Indonesia over the next 30 years? [2 marks]

A.2.2. Starting from the characteristics of Indonesia shared above and expected climate change dynamics, write three examples of how climate change might have an impact on Indonesia. [6 marks]

1.

2.

3.

A.2.3. What adaptation measures can help to reduce the impact of climate change in Indonesia? Write three examples. Examples must reflect the local conditions. Avoid general findings. [6 marks]

1.

2.

3.

B. Icy conditions refuelled [24 marks]

When exploring a research topic, geoscientists are usually in need of a dating technique to determine the time and length of Earth surface processes, climatic periods, the changes in ecosystems etc. In this task, you will get to know a novel method, the so-called cosmogenic nuclide dating and learn how to benefit from its data.

Terrestrial cosmogenic nuclide dating: This dating technique uses cosmogenic nuclides (e.g., ^{10}Be , ^{26}Al , ^{36}Cl) produced in-situ in rocks exposed to cosmic radiation due to nuclear reactions occurring within crystal lattice of minerals.

B.1. GLACIGENIC LANDFORMS AND THEIR IMPORTANCE

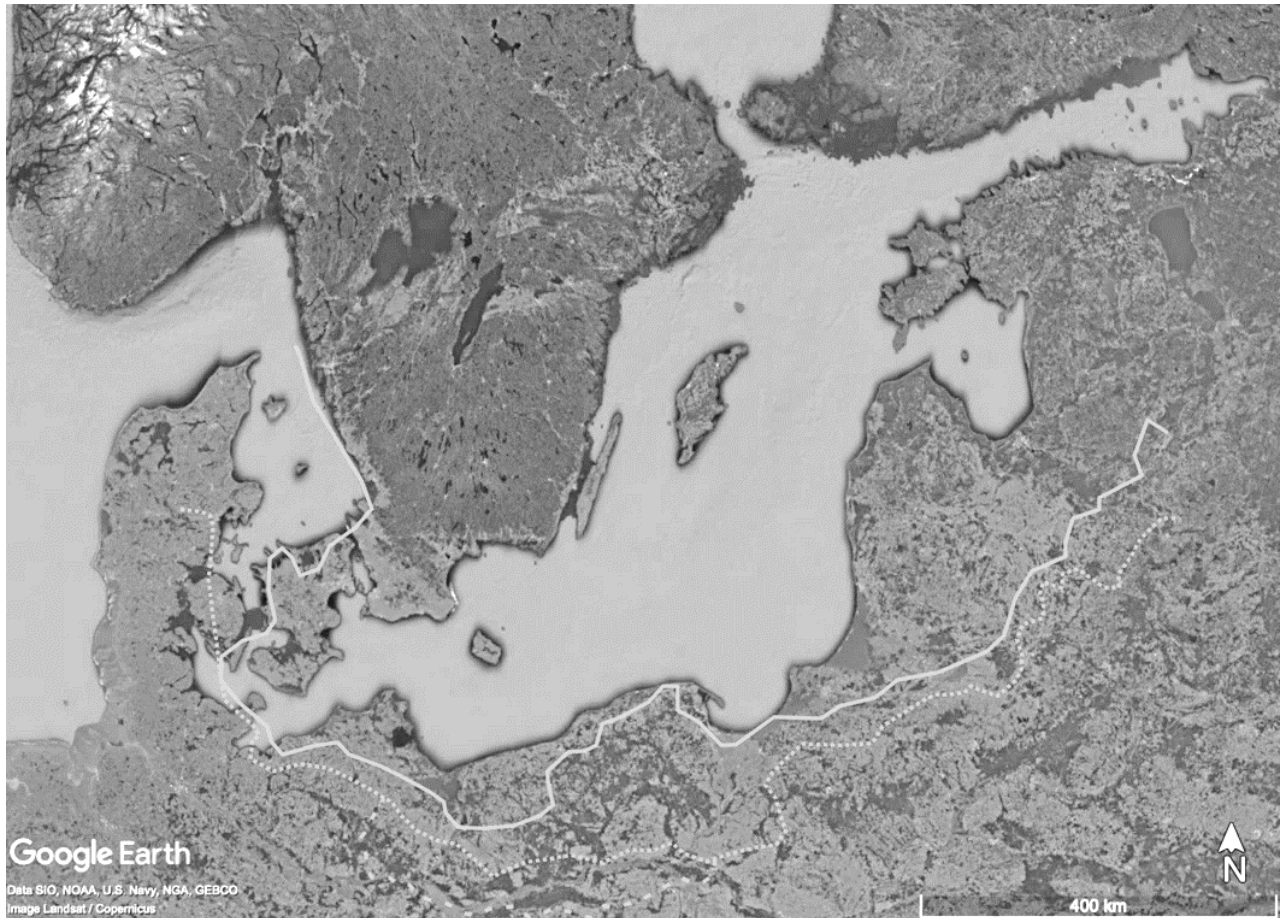
B.1.1. Based on figure at B.1. in SB, describe the origin of erratic boulders in three sentences. [2 marks]

B.1.2 ^{10}Be surface exposure dating of erratics [6 marks]

In SB B.1.2. you can see a nice field example of erratics. They are quite widespread in the southern Baltic area, hence can be a useful tool to reconstruct past ice-marginal environments.

Your task is to mark the erratics found in SB Table B.1.3 in the following map (available in colour in SB B.1.4.), according to the three phases (marked with solid, dotted, and dashed lines).

Note that their relative position to the ice sheet limits is important, not the exact geographical location.



The southern Baltic area with the three major ice sheet limits during the last **glacial periods** (make your markings here, and not on the map of the SB)

B.2. DESCRIBE THE GENERAL LANDSCAPES OF DENMARK, LITHUANIA, AND NORTHERN POLAND IN 6-8 SENTENCES. Focus on the forms with glacial origin. Pictures at SB B.2. may give you a hint. [8 marks]

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

B.3. TRUE OR FALSE – JUST A FEW MORE WORDS ABOUT THE ICE SHEETS [8 MARKS]

Statement	True	False
Meltwater also plays an important role in forming glacial landscapes.		
Ice sheets reach the same latitude everywhere.		
Melting ice covers have no impact on global climate.		
The approximate flow direction of rivers Elbe and Vistula were the same as today during the last glacial period.		
Glacial till (the sediment transported and deposited by ice streams) has no visible stratification.		
Both coniferous and deciduous forests were found around the last ice sheets.		
Surfaces with overlying late Tertiary sediments in Germany had lower erodibility during the glacial maximum than the Precambrian igneous and metamorphic rocks in Sweden.		
River valleys of former meltwater streams formed on sand plains served as canal shipping routes at the dawn of the industrial revolution.		

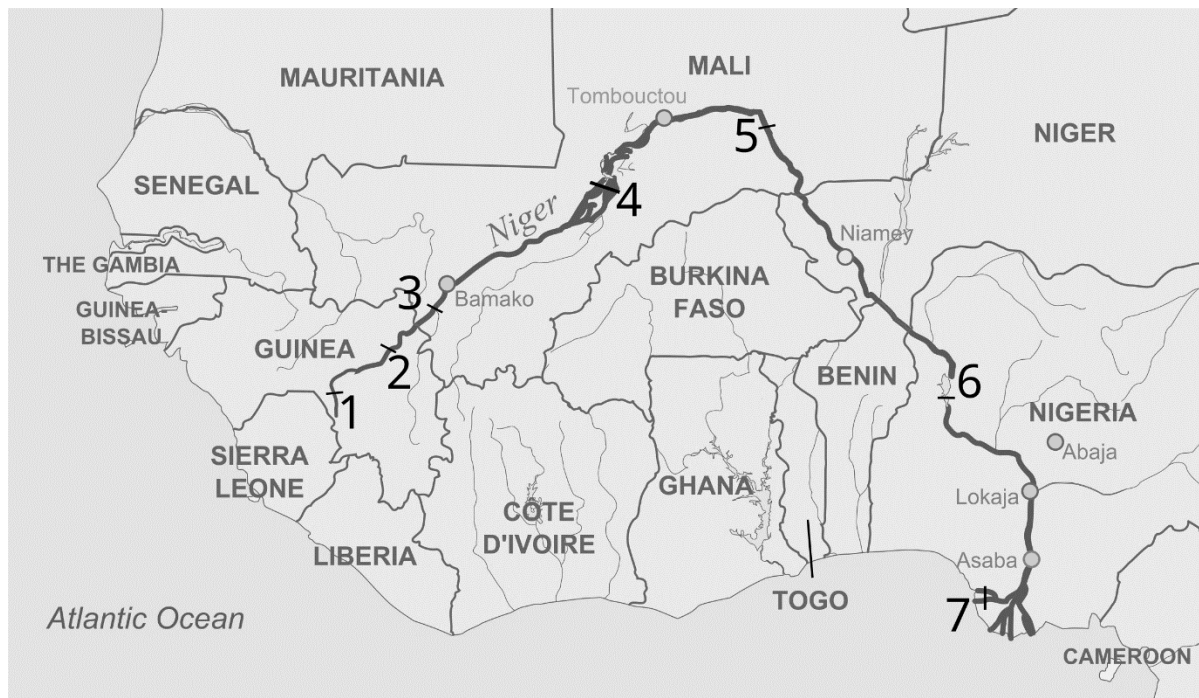
C. Journey on the Niger River [24 marks]

The Niger River is the main river of West Africa, with a total length of about 4,180 km. Although is far less known, than his longer “cousin”, the Nile, it plays a significant role in several countries’ economy, and, it has some geographical peculiarities interesting enough to be a topic of our competition.

C.1. ZONALITY LIKE IN A TEXTBOOK

Africa has always been a textbook example of the geographical zonality. The Niger crosses different climates through its journey, therefore it is a perfect example of this classical topic.

C.1.1. Study climate charts at C.1. in SB along the Niger. Mark the estimated location of the four diagrams (A-D) on the map here. [2 marks]

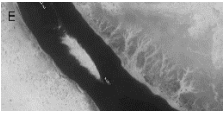
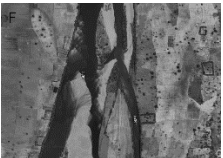
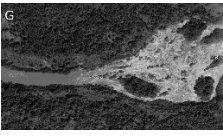
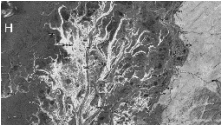
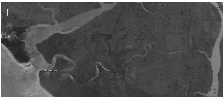




C.1.2. Fill in the table with answers regarding the climate charts B, C and D. [3 marks]

Charts	B	C	D
Name of the climate type			
Zonal soil			
Three potential agricultural products			

C.2. Typically, a river gradually accumulates more and more water from its source to its mouth, and also slows down by arriving from the areas of higher gradient to the plains. However, Niger, as you can observe, has a strange course and an unusual longitudinal section...

C.2.1. STUDY THE SATELLITE IMAGES (E-K) OF C2 IN THE SB. FILL IN THE TABLE WITH THE INFORMATION REQUIRED. PAIR THE PICTURES AND THE NUMBERS IN THE MAP. [14 marks] Note: every picture is oriented “normal”, Northern direction is always on the top of the picture.

Mark of the picture	Number in map	Further required information
E 		What are landforms on the northern riverbank?
F 		Name the geomorphological form in the riverbed.
G 		Name the geomorphological form depicted.
H 		Name the geomorphological form depicted.
I 		Name the geomorphological form depicted.
J 		Hints of what type of agriculture could be observed in this picture?
K 		What can be the primary function of this reservoir?

C.3. STUDY THE DIAGRAM OF THE NIGER'S DISCHARGE AT C.3 IN SB, COMPARE IT WITH THE CLIMATE DIAGRAMS (SB C1) AND ANSWER THE QUESTIONS.

C.3.1. How would you describe shortly the water regime of the Niger River? [1 mark]

C.3.2. How would you describe tendencies that can be observed in the discharge-diagram? [2 marks]

C.3.3. What could be the reasons behind these tendencies? [2 marks]

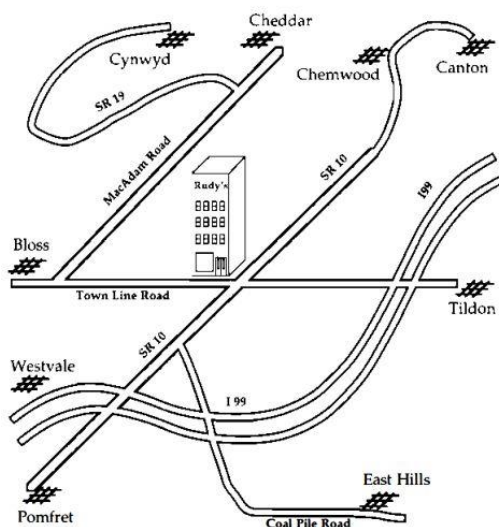
D. Lying with maps [24 marks]

Maps often use a distorted and falsified form of reality to successfully convey the information they contain. As Mark Monmonier, author of the book "How to Lie with Maps", writes: "Not only is it easy to lie with maps, it's essential." The examples in this exercise were inspired by his book.

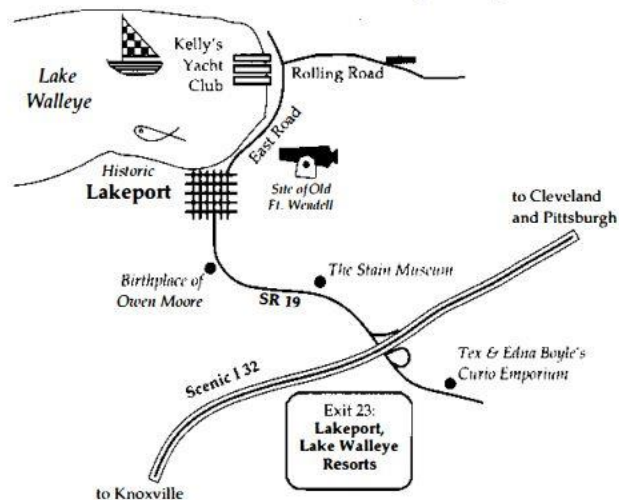
D.1. ADVERTISING WITH CARTOGRAPHY

What do advertising and cartography have in common? Both communicate a limited version of reality. Maps used for advertising are more generalised, they are limited to a certain part of reality and do not show features that are not useful to the advertiser. On the other hand, they are more decorative than traditional maps because of their intention to attract attention and are often accompanied by pictograms. Two of the most important aims of advertisement maps are to show accessibility and attractiveness. Maps that show the easiest possible accessibility contain spatial distortion. Road networks are simplified and some places that are distant in reality are shown much closer. Another effective tool for generalisation is the careful selection of objects and names shown in maps. The advertiser is interested in having names in the map that increase revenue, make the environment look attractive or are possibly closely associated with the advertiser (strategic partnership). Take a look at the two maps below. Both are generalised representations of reality. The map of Rudy's store contains spatial distortion (Canton is in reality nearly 50 kilometres away, while East Hills is closer than Westvale), which is used to indicate "excellent" accessibility. The map of Karen's camp also shows easy access via the highway exit sign and illustrates the tourist attractions of the area to attract guests.

Rudy's Plumbing Supplies: as close as you are



Karen's Bowling Camp



Source: Mark Monmonier, *How to Lie with Maps*

For this task, the **Miami Golf Club** commissioned you to create a promotional map. The map should show both the easy accessibility of the club and the attractiveness of the area without the overwhelming amount of information. You will gather some information during a meeting with the management. Golf club guests typically come from Houston, Los Angeles, Detroit and Havana. According to a recent survey, golf club guests are attracted by the city's sports and entertainment facilities. As the club cannot provide accommodation for its guests, the map should also show the availability of accommodation. Transport between the airport and the hotel is provided by taxi. However, as it is important for guests to get to the hotel quickly, the map should show a short route between the airport and the hotel. Although this is not public information, the club owner

PW:

has a close relationship with the management of the Laces Out hotel chain. **Maps in D.1 SB help you a lot.**

D.1.1. **Create an advertisement map** based on the description, the information collected and the following maps. Map of the road network of the municipality and the accessibility of certain services from OpenStreetMap. **You are allowed to use no more than three different colours.**

[12 marks]

Create your map here.

D. 2. ONE COLLECTS STAMPS, OTHER COLLECTS PROVINCES.

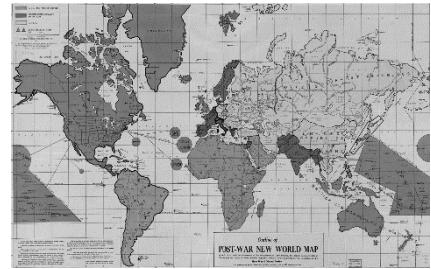
Nowhere is lying with maps more important than in political propaganda. Falsified maps can persuade a country's population and generate sympathy in the event of an international conflict. Propaganda maps can include elements such as the annexation of disputed territories to the mother country by clear symbols, or the way in which the name of a settlement populated with ethnic minorities across the borders is spelt.

D.2.1. Propaganda maps often appeared on stamps. The following exercise shows maps of disputed territories or borders not recognised by international conventions. **Name the state (one for every stamp) might have felt offended today by the issue of the stamp. One country may be listed in more than one place. Stamps are printed in SB D.2. in colour and in higher resolution. [6 marks]**

[illegible]

D.3. LOOK AT THE MAP IN SB D.3. ABOUT THE POST WW2-WORLD.

D.3.1. The editors of this map used several techniques to distort their image according to their interests. **Name three of these mapping techniques and evaluate their impact on the map** (map vs reality). **[6 marks]**



Mapping technique	Impact

E. The Gender Scenario

A huge demand on gender equality has appeared in many societies in the past decades, however the progress and the speed towards equity is different. In the following tasks you are to answer questions about the geography of gender (in)equality.

E.1. STUDY FIGURE E.1. IN THE SB AND ANSWER THE QUESTIONS.

E.1.1. In SB E.1. you can see the spatial distribution of the Gender Inequality Index by country, 2021. **Give three possible reasons for such geographical distribution of gender inequality. [3 marks]**

1.

2.

3.

E.1.2. According to Figure E.1., explain shortly what gender inequality means [1 mark]

E.1.3. Name one possible primary statistical data/variable to every category which could be used by the construction of an inequality index. [2 marks]

1. Demography	
2. Economy	
3. Education	
4. Legal status	

PW:

E.2. DETERMINE THREE GROUPS OF COUNTRIES BY THEIR GENDER INEQUALITY INDEX (GII) The groups must have specific cultural features as well. Name the groups, estimate the average Gender Inequality Index, name common cultural feature, and give examples. By the examples, you should add two, each from different continents. Fill in the table. [6 marks]

	Name of the group	Estimated value of the average GII	Cultural feature	Examples (2 each)
1				
2				
3				

E.3. Study table E.3. in SB. In this table you can learn information on selected Latin American countries and their gender relations. **Now your task is to use some of these data to create a chart that describes differences in gender (in)equality.** Use at least three of the variables in the table, and you must create one mathematic variable of them. You may choose the type of diagram that best expresses your index. [10 marks]

E.3.1. DO YOUR CALCULATIONS HERE:

PW:

E.3.2. DRAW YOUR CHART HERE:

E.4. STUDY MAPS AT E.4. IN THE SB. COMPARE THEM WITH SOURCES E.1. AND E.2.

**E.4.1. What contradictions can you recognise when evaluating figures E.1 & 4. and your chart?
Find two contradictions and explain them. [2 marks]**

1.

2.

F. Japan – from miracle to sunset? [24 marks]

For the generations of the baby-boomers and the X-gen, Japan was the symbol of rapid modernisation and breakneck economic growth – something, like China for the Millennials. However, during the last three decades, this Asian power has been more often referred as a slowly developing economy with many structural challenges. In the following block, you have some questions about the economic geography of Japan.

F.1. We hope, it is not a dramatically new information to you, but Japan is located on four large and several small islands – 6,852 according to Wikipedia. Although it is a quite densely populated country overall, the distribution of the population is one of the most unbalanced on the globe.

STUDY MAPS F.1 IN SB AND ANSWER THE QUESTIONS.

F.1.1. Give three possible reasons of the current distribution of the population. [3 marks]

1.

2.

3.

E.1.2. Give two benefits and two problems of the current distribution of the population [4 marks]

+	–

F.2. STUDY THE GRAPHS OF F2 IN SB. THEY ARE BORROWED FROM HARVARD ATLAS OF ECONOMIC COMPLEXITY, WHICH RANKS ECONOMIES USING THEIR OWN COMPLEXITY INDEX. DESPITE ALL SIGNS OF THE CRISIS, JAPAN IS RANKED 1ST IN 2021.

F.2.1. Graphs F.2. 1-4 represent the major foreign trade partners of Japan in 1995 and 2020. **Please select the appropriate graph and give their number to the right box [4 marks]**

Japan's main export partners in 1995	Japan's main import partners in 1995
Japan's main export partners in 2020	Japan's main import partners in 2020

F.2.2 China is often referred to as taking a similar but delayed path of economic development. **Select from the graphs F.2.5-6. [2 marks]**

Export structure of Japan, 1996	
Export structure of China, 2020	

F.3. NOW, YOU HAVE TO USE EACH GRAPH IN SECTION F TO GIVE THE CORRECT ANSWERS. In the followings, you will read some sentences consisting of two parts, connected with “because”. First part is the statement, second is the reasoning. You have to mark... **[6 marks]**

- A – if both statement and reasoning are true, and the two parts connected to each other (part 2 gives a real cause for part 1)
- B. – if both statement and reasoning are true, but there is no possible connection
- C – Just part 1 is true, part 2 is false
- D – Part 1 is false, part 2 could be true,
- E – Both part 1 and 2 are false

1.	In the last decades, despite of the growing significance of China, South Korea and Taiwan were able to keep their significance as trade partners for Japan because their economy provides simpler industrial products, consumable goods for the Japanese customers.	
2.	The current stage of economic growth in Japan could be characterised as expansive, because Japanese employees spend more hours with work than in any other major economic power.	
3.	Global recession in 2009 and 2020 hit the country hard, and the decrease of GDP is typically greater than the global average because Japan is still a highly export-oriented economy, deeply integrated into the world markets.	
4.	The combined share of such resource-oriented economies like Saudi-Arabia, Canada, Brazil, Australia, or Chile has been decreased between 1996 and 2020, because Japan's economy became more self- sufficient from resources.	
5.	The decades of economic miracle were over gradually by the early 1990s because other Asian powers started to emerge.	
6.	The overall GDP growth has remained small during the most of the past 30 years because the dependency from the imported energy remains a significant issue.	

F.4. Workforce has always been a key element of Japan's economic miracle. Being the only major power with a strongly decreasing population, the conditions of extensive growth are not really available.

F.4.1. Compare graphs F.4.2. & 3. Describe the connection between GDP growth and per capita GDP-growth. [2 marks]

F.4.3. Give three possible methods how the economy of Japan adopts to the shrinking and aging labour force. [3 marks]

1.

2.

3.

Congratulations! You have finished the test!