11th International Geography Olympiad

Krakow, Poland

12–18 August 2014

Written Response Test

Marking Scheme

Instructions for the Markers

1. **Check if the iGeo Student Numbers are on each sheet before dividing up the paper.**

2. This test consists of 6 Sections.

3. One whole Section per marker and double-checker.

4. Check whether the answer continues outside the designated area.
   No credits will be given to answers in the Resource Booklet.

5. The maximum total mark is 90.
   The mark for each question is given at the beginning of the question.
   There are a maximum of 15 marks for each Section.

6. Get the hang of the full range of answers by reading through a few papers with your co-marker before you start your marking.

7. These answers are not exhaustive. Credit any relevant answer.

8. Mark only the required number of answers (reasons, examples, etc.).
   For instance, if the question asks for 2 reasons and there is more than 2, only the first 2 reasons should be marked.

9. Put your mark next to the question number in the column on the left – it eases the work of the person who has to put the numbers into MS Excel.
   Total the marks by the title of the Section.

10. The Moderators (Sue and Anu) will sample the marking of all teams.

Section A: Geology and Coastal Landforms

6m   1.   Study Resource Booklet Figure A1: The rock cycle (rock formation).
Fill in the table:
    a) Describe the processes occurring at stages A, B and C of the rock cycle;
    b) Name the rock type formed at each stage and give an example.

Stage	Process	Rock type and example
A		Rock type: Example:
B		Rock type: Example:
C		Rock type: Example:

The answers are linked. The students must get the right rock type and example with the right process to get the full 2 marks for the stage.
A. Deposition occurs from rivers entering the sea and from sediment suspended in the sea. Layers of sediment are built up on the sea floor and compaction and sedimentation lead to these sediments forming rocks called
sedimentary rocks e.g. sandstone, shale, limestone, gritstone.
B .Rocks come under intense pressure and heat and this leads to melting of the rocks. The less dense material forms magma chambers or rises to the surface in the form of volcanoes or igneous intrusions –
igneous rock, e.g. basalt, granite, rhyolite.
C. At destructive plate boundaries one plate is subducted beneath another. At depth the plate is put under great pressure and subject to great heat and
metamorphic rocks are formed e.g. gneiss, marble, schist.

2.   Study Resource Booklet Figure A2: A rocky coast.
Choose 2 features of the coastline and explain in detail how natural processes are shaping them.

Feature 1: ....

Natural processes: ....

....

....

....

....

Feature 2: ....

Natural processes: ....

....

....

....

....

Answer: 5m – 0.5 marks for feature and 2 marks for explanation.

Features such as:
(vertical) cliffs,
vegetation on cliffs,
beach,
wave cut platform or boulders on the beach.
Processes have to be connected to the named feature. Maximum 2 marks for a list.
Hydraulic action. Air may become trapped in joints and cracks on a cliff face. When a wave breaks, the trapped air is compressed which weakens the cliff and causes erosion.
Abrasion. Bits of rock and sand in waves grind down cliff surfaces like sandpaper.
Attrition. Waves smash rocks and pebbles on the shore into each other, and they break and become smoother.
Solution. Acids contained in sea water will dissolve some types of rock such as chalk or limestone.
Mass movement. The base of the cliff is undermined by the waves and material slumps or falls down.
Deposition forming the beach. Waves transport and deposit sediment from further along the coast or out to sea.
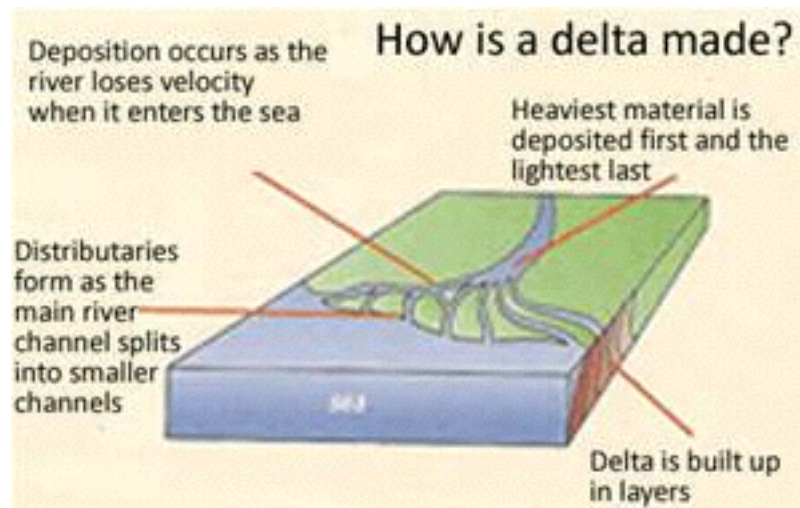
3.   Draw an annotated diagram or set of diagrams to show how a delta is formed.

Should include some of the following:

features: meander, distributaries, bars;
processes: velocity slows and deposition occurs, largest particles first then finest further down the delta, layers of sediment build the delta out into the sea.

Not labels but annotations – short comments to a diagram in order to describe or explain.

How is a delta made?

Deposition occurs as the river loses velocity when it enters the sea

Heaviest material is deposited first and the lightest last

Distributaries form as the main river channel splits into smaller channels

Delta is built up in layers

Example Diagram only

1. As rivers near the sea they contain high sediment loads and the rivers start to spread out laterallly.
2. This lateral movement of water reduces hydraulic radius and increases wetted perimeter.
3. This causes sediment to be deposited.
4. This sedimentation builds up over time and can create small islands which split the channel, similar to braided streams.
5. This can happen again and again until the river consists of a number of smaller streams separated by islands.
6. If sediment is coarse grained arcuate deltas form. If it is fine grained then birds foot deltas can be created (e.g. Mississippi).
7. Sediment is often deposited on the sea ward side, which builds the delta outwards into the sea. These areas are called fore beds, and are highly unstable. They often collapse and cause mass movements within the sea and clouds of sediment known as turbidity currents.

Section B: Forest Resources

2m   1.   Explain how people can benefit from forests (other than wood as a raw material).

....

....

One well developed answer (with explanation) or two shorter answers.
Answers can be anything material or abstract: photosynthesis by producing oxygen and consuming carbon dioxide, regulation of greenhouse effect, purification of air, preventing of (soil) erosion, hydrological cycle (transpiration) and freshwater accessibility/availability, food (berries, mushrooms, animals), forests as research area/ object, amenity and leisure values, hiking etc. spiritual resource.

3m   2.   Study Resource Booklet Figures B1: Three types of forest.
Fill in the table:
   a) Name the types of forest;
   b) Match each type of forest to the climate graph (A, B and C).

Type of forest	***mediterranean woodland/scrub***	***deciduous woodland***	***coniferous forest***
Climate graph	***B***	***C***	***A***
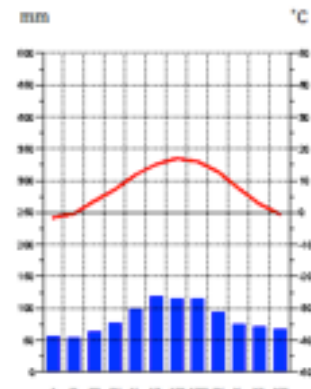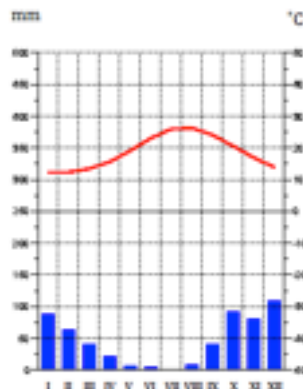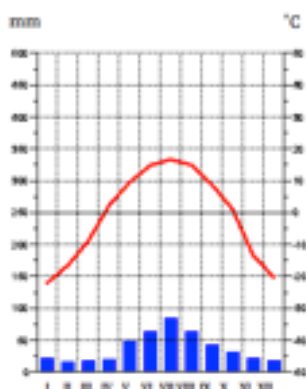
Climate graphs of 3 locations
source: http://www.klimadiagramme.de

2m   3.   Study Resource Booklet Figure B2: Global forest ecosystem change, 2005. Name the 2 main types of forest in which there is a net loss.

Type 1: *Tropical forest/Equatorial forest (rain forest is acceptable)*

Type 2: *Coniferous forest*

3m   4.   Give 3 reasons for the loss of forest worldwide.

Reason 1: ....

Reason 2: ....

Reason 3: ....

Answer: 3m
New land for agriculture.
New building area for growing population.
New area for transportation infrastructure (roads etc.).
New areas for leisure and tourism expansion (golf courses, entertainment resorts etc.).
Mining (the rock under forest contains minerals or ores).
Wood for industry (paper, pulp, furniture).
Wood for energy and/or households (burning wood).
Acid rain
Forest fire (humanly induced)

This Section continues on the next page.

5m 5. Study Table B1 below: World forest cover in 2010 by geographical regions (source: FAO, 2013).

Geographical region	% of world forests	Forest structure (%)		
		natural	naturally regenerated	planted
Africa	16.7	9.6	87.4	3
Latin America	23.7	73.1	24.9	2
Angloamerica	15.2	39.2	55.2	5.6
Asia	14.7	18.6	60.7	20.7
Europe (with Russian Federation)	24.9	26.2	66.9	6.9
Australia and Oceania	4.7	18.6	79.3	2.1
WORLD	100.0	35.7	57.3	6.9

a) Which geographical region has the largest percentage of forest that has been reforested?

Outline 2 reasons for your choice.

Region: ....

Reason 1: ....

Reason 2: ....

a) 0.5m – Asia/Africa (the most),
Reasons:
2m – in Asia due to raised ecological awareness, the level of economic development, state measures for forest conservation and reforestation
- due to higher temperature and humidity (unless soil erosion occurs) forests are being naturally regenerated

b) Which geographical region has the smallest percentage of forest that has been reforested?
Outline 2 reasons for your choice.

Region: ....

Reason 1: ....

Reason 2: ....

b) 0.5m – Latin America (the least)
Reasons:
2m – in Latin America due to less developed ecological awareness, larger forest exploitation by transnational corporations, state plans for reforestation are at minimum level
- less forest exploitation by foreign companies in Africa (cutting down trees and transport of wood is much more difficult/expensive than in e.g. Latin America)

Section C: Global Ecological Footprint

1m   1.   Study Resource Booklet Figure C1: Ecological footprint by component, 1961–2007.
In which year was world biocapacity exceeded?

1m – 1975 (1974–1976 accepted).

2m   2.   Outline the trends of the global ecological footprint as shown in Figure C1.

....

1m – The overall ecological footprint has had a steady and quite rapid increase from 1961 when 0.6 planets were used, to 1975 when the human demand exceeded available biocapacity (this is referred to as overshoot), continued increasing but at a slower rate till approximately 2003, after which the rate of increase sped up again till 2007 when 1.5 planets were used.
1m – The other components of the ecological footprint have increased very slowly, what has contributed most to the excessive use of our planet Earth is Carbon.

3m   3.   Study Resource Booklet Figure C2: Composition of low, middle and high income countries' ecological footprint per capita, 1961–2007.
Identify which of the graphs A, B or C represents high income countries.
Justify your choice with 2 reasons.

High income countries are represented by graph: ....

Reason 1: ....

Reason 2: ....

Maximum 2 marks if wrong graph identified but appropriate reasons given.
1m – High income countries – graph B.
1m – Time: Carbon footprint was rising steeply as early as the 1960s marking the rise of living standards (consumerism) of both states and individuals.
1m – The share of Carbon footprint is highest in high income countries because they have fossil-fuel-based energy use economies instead of resource consumption, e.g. cropland.

(Continued)

4. Explain how the economic recession that started in 2007 could have affected the ecological footprint of the 3 different income economies.

Low income countries: ....

Middle income countries: ....

High income countries: ....

Low income countries – stayed the same.
Middle income countries – stayed the same (the sharp increase of the previous 5 years 2003–2007 stalled as the demand for their products from high income countries stalled).
High income countries – dropped sharply. In 2010 the per capita footprint started to grow again only in a few high income countries as governments began spending billions of dollars to stimulate their economies.

5. Study Table C1 below: Ecological footprint and biocapacity, 2007 (source: National Footprint Accounts 2010 edition).

Fill in the blank highlighted spaces in Table C1.

Countries	Population (million)	Ecological footprint (global hectares per capita)	Biocapacity (global hectares per capita)	Ecological deficit or reserve
South Africa	49.173	2.3	1.1	-1.2
Tunisia	10.069	1.9	1	-0.9
Zambia	12.314	0.9	2.3	1.3
China	1,336.551	2.2	1	-1.2
India	1,164.67	0.9	0.5	-0.4
Japan	127.396	4.7	0.6	-4.1
Mongolia	2.611	5.5	15.1	9.6
Saudi Arabia	24.68	5.1	0.8	-4.3
United Arab Emirates	6.248	10.7	0.8	-9.9
Germany	82.343	5.1	1.9	-3.2
Netherlands	16.46	6.2	1	-5.2
Russian Federation	141.941	4.4	5.7	1.3

United Kingdom	61.129	4.9	1.3	-3.6
Argentina	39.49	2.6	7.5	4.9
Brazil	190.12	2.9	9	**6.1**
Mexico	107.487	3	1.5	-1.5
United States of America	308.674	8	3.9	-4.1
Australia	20.854	6.8	14.7	7.9
New Zealand	4.193	4.9	10.8	5.9
WORLD	**6,671.557**	**2.7**	**1.8**	**-0.9**

1m   6.   How many planet Earths would be needed if the world's ecological footprint was the same as that of South Africa, based on Table C1?

……

1.3 planets (the ecological footprint of South Africa 2.3 / biocapacity of the world 1.8 = 1.3 planets)

2m   7.   Comment on the differences between the ecological deficits or reserves of countries in:
   a) Africa and
   b) Oceania (Australasia),
based on Table C1.

……

1m – Although the per capita ecological footprint is low, South Africa and Tunisia face ecological deficit due to large population density and high birth rates (population growth); they have a deficit of agricultural land (especially Tunisia). South Africa and Tunisia are facing resource depletion (intensive use of resources – consumption of a resource is faster than it can be replenished).
Zambia still has some ecological reserves – it is well known for its natural resources, especially water resources (Zambezi River and Congo River) important for population and economy (hydro energy, transport, mining and industry).
1m – Although the per capita ecological footprint is high, Oceania (Australasia) still has ecological reserves due to much smaller population density/growth which results with much smaller pressure on the land (smaller ecological footprint). Countries in this area are using fewer global hectares than their own land mass provides. These areas still have significant export potential (food reserves).

References

Ewing B., D. Moore, S. Goldfinger, A. Oursler, A. Reed and M. Wackernagel 2010: The Ecological Footprint Atlas 2010. Oakland: Global Footprint Network.

World Wide Fund For Nature International, Zoological Society of London and Global Footprint Network 2010: Living Planet Report 2010. Biodiversity, Biocapacity and Development.

2m   8.   Study Resource Booklet Figure C3: Number of planets scenarios, 2007. Suggest some of the ways in which
   a) individuals,
   b) industries and businesses
could reduce the ecological footprint overshoot and achieve the rapid reduction scenario?

Individuals: ....

Industries and businesses: ....

1m – Personal behaviour: means of transportation, electricity, gas, fuel consumption (reduction and/or change of source, e.g. photovoltaics on roof), use of water saving gadgets , purchasing food (organic local production for local consumption), becoming a vegetarian, residence to the home environment-friendly, waste treatment (recycling).

1m – Corporate activities: establishment of corporate ethics on natural resource development and product manufacturing (CSR), human rights and environmental pollution control measures, investment activities to the creation of an environment such as desert greening projects.

Section D: Impacts of Global Warming

3m 1. Suggest how global warming could affect food supplies in Africa.

....

- ■ *Due to long-term droughts large agricultural areas for crop cultivation are being lost which directly results in a decrease of food production; in these agricultural areas irrigation is not possible due to rainfall variability.*
- ■ *Rainfall variability – the precipitation does not change but the seasonality does.*
- ■ *Evaporation from land water (lakes and rivers) is increasing; at the same time water availability for irrigation decreases and this directly influences soil salinisation which increases.*
- ■ *Under the influence of temperature increase, interrelations in the hydrological cycle change – rivers transform to swampy areas (e.g. South Sudan – White Nile), the number of insects (e.g. locusts) increases and and some insect species spread to new areas and they all contribute to crop yield decrease.*

3m 2. Suggest how global warming might affect the El Niño Southern Oscillation (ENSO) in the southern Pacific.

....

Answer: 3m
- ■ *ENSO would be more frequent (1m)*
  - ■ *from every 7 years to every 2-3 years*
- ■ *ENSO would be more intense (1m)*
  - ■ *Global warming intensifies the sea surface temperature difference between eastern and western Pacific*
  - ■ *Changes in sea current flow and its characteristics (e.g. cold Humboldt Current becomes warm in one part)*

1m for an explanation of either point

1m   3.
Study Resource Booklet Figure D1: The height of land above sea level in Bangladesh.
How high would sea level have to rise to flood Dhaka?
Mark the correct box.

	< 2 m
	2–5 m
X	> 5 m

*Answer: More than 5 metre*s

3m   4.   Study Resource Booklet Figure D2: Solar-powered floating boat school in Bangladesh.
Explain how the climate and physical environment of Bangladesh mean that this type of school may become more common.

....

***Answer*: 3m**
Any three points.
- ■   **Higher flood risk because of low lying land and land below sea level.**
- ■   **Melting glaciers in Himalayas cause more water to flow in the rivers.**
- ■   **There is a high incidence of cyclones which cause flooding.**
- ■   **Land is subsiding, e.g. Ganges delta (due to isostatic change).**

5m   5.   Give 2 different circumstances (other than flooding) in which people might become 'environmental refugees'. For each, explain how different impacts lead to people losing their homes.

Circumstance 1:   ....

Circumstance 2:   ....

0.5 x 2 = 1m – for circumstances: cyclones, drought, forest fires, earthquakes, volcanoes, sea level rise,   mud slides.
2m – for each explanation but no repetition allowed e.g. flooding from cyclones and flooding from rivers overflowing their banks due to intense rainfall (same thing).
- ■   **As a result of emergency situations to do with hazards, e.g. as a result of volcanic eruptions, or earthquakes or floods. Homes are destroyed or buried/ These are often temporary moves.**
- ■   **As a result of worsening environmental conditions such as deforestation, or loss of land due to sea level rise. Salinisation leads to degradation of soil due to high tides.**
- ■   **Due to repeated crop failure because of desertification people have to move because they cannot get enough food.**

Section E: Population and Health

3m   1.   Study Resource Booklet Figure E1: Life expectancy in high and low income countries, 2004–2012.
Suggest 3 reasons for the differences in life expectancy between high and low income countries.

Reason 1: ....

Reason 2: ....

Reason 3: ....

***Answer*: 3m**
Award 1m for each reason provided up to a max of 2m. Award an additional mark for a well-explained reason.

Possible reasons for higher life expectancy in high income countries in general:
- **Larger percentage of populations living in urban areas with access to quality healthcare services**
- **Adequate sanitation and ready access to clean water**
- **Higher levels of education affect health outcomes**
  -

Possible reasons for greater improvement in life expectancy in low income countries:
- **Proliferation of aid programmes that target low income countries e.g., UN World Food Programme and** Médecins Sans Frontières' Access Campaign
- **Rising personal incomes due to global shift of economic activity from high to low income countries enabling individuals to afford health care and nutritious food**
- **Easily controlled infectious diseases have already been largely eliminated in rich countries and their control in poor countries is having a marked effect on death rates**
- **Infant mortality is already low in rich countries. Significant improvements in this aspect in poor countries shows up in improving life expectancy.**

3m   2.   Study Resource Booklet Figure E2: Cancer incidence in Asia, 2008.
Describe 3 significant differences in cancer incidence between South-Eastern Asia and Eastern Asia.

Difference 1: ....

Difference 2: ....

Difference 3: ....

***Answer*: 3m**
Award 1m for each possible answer up to a max of 3m. Award no marks to answers that do not effectively compare the two regions e.g., 14% of patients in Eastern Asia suffer from lung cancer. There are 725,446 cancer patients in South-Eastern Asia would get no marks.

Possible differences:
- *Occurrence: 5 times more cancer patients in Eastern Asia as compared to South-Eastern Asia;*
- *Breast cancer: high incidence in South-Eastern Asia, not among the top 4 cancer types in Eastern Asia;*
- *Stomach cancer: high incidence in Eastern Asia, not among the top 4 cancer types in Eastern Asia.*

5m   3.   Study Resource Booklet Figure E3: Malaria incidence, 2000–2012.
Describe and explain the pattern and trend of malaria incidence.

Unfortunately this image was not available for public distribution.

4m   4.   Explain briefly 4 possible measures to reduce the spread of infectious diseases as global tourism and travel increase.

Measure 1: ....

Measure 2: ....

Measure 3: ....

Measure 4: ....

***Answer*: 4m**
Award 1m for each valid measure up to 4m. No marks should be awarded for further elaboration of each measure.

Possible measures:
- *Increase public awareness, through popular/social media, of infectious diseases such as HIV/AIDS, dengue and malaria and how to lower the risk of being infected;*
- *Encourage travellers and tourists to get vaccinated before they visit high risk locations;*
- *Impose quarantine period on persons arriving from high risk locations;*
- *Install quick diagnosis equipment at immigration facilities such as infrared screening systems.*
- *warning/negative travel advice*

Section F: Globalisation and Transnational Corporations (TNCs)

1m   1.   What is globalisation?

....

Answer*: *1m
1m – The process by which the world is becoming more interconnected (as a result of increased trade and communications).

3m   2.   Give 3 factors that have influenced the process of globalisation.

Factor 1: ....

Factor 2: ....

Factor 3: ....

Answer*: *3m
- ***Improved transport (air travel, etc.).***
- ***Improved communications (Internet and mobile technology)***
- ***Labour availability and skills (e.g. cheap labour in India).***
- ***Freedom of trade which removes barriers between countries.***
- ***increase in tourism and migration***

4m   3.   Study Table F1 below: Examples of adaptations by Transnational Corporations (TNCs).

Entertainment industry	Food industry
• Mickey Mouse is dressed in traditional Japanese clothes in the Disney theme park located there. • MTV has created a range of music Internet stations for different countries all over the world.	• Unilever has designed a range of Wall's ice creams for Indonesia that uses more coconut. • McDonald's opened a 100% vegetarian restaurant in Amritsar, India, home of a sacred Sikh temple.

Explain, giving 2 reasons why transnational corporations (TNCs) adapt their products for different markets.

Reason 1: ....

Reason 2: ....

Answer*: *4m
1 mark for each different explanation and 1 mark for each extension that supports that explanation.
Answers should focus on explanations of TNC product adaptation:
- ***Profitability – these are sales strategies;***
- ***Culture – some items not wanted/liked/to taste;***
- ***Religious objections;***
- ***Youthful product no yet mass marketed, trials;***
- ***Affluence – not all can afford all products of TNCs;***
- ***Local availability of parts/ingredients may affect product.***

4. Study Resource Booklet Figure F1: Distribution of the McDonald's Restaurants, 1940–2007.
Describe and suggest reasons for the global spread of McDonald's Restaurants since 1940.

....

***Answer**: 3m*
Clear description of distribution over time

- ***1970-1974 McDonalds spreads to high income countries with the highest HDI (G7 in Europe, Japan, Australia) – English language in communication and trade, high income, working hours and need for fast food restaurants (take out); McDonalds opened restaurants in several countries in Central America who were economically connected to/dependent on USA; they adopted „American" way of living (in everyday life)***

- ***1975-1979 Brasil, Ireland, New Zealand, Switzerland, Austria... new industrial economies, life style as in other high income countries...***

- ***1980-1984 Scandinavian countries, Spain – McDonalds spreads to mainly higher income countries, neighbouring those where the restaurants were already present***

- ***1984-1989 globalisation processes affect (demographically large) countries such as Argentina, Turkey, Venezuela and Mexico oil reserves (important to USA)***

- ***1990-1994 fall of Berlin Wall and "Iron curtain"; transition from socialist to market economies + globalisation process ("American lifestyle") enters/ spreads to several Eastern European countries, Russia (former USSR) and China (opening to the west) also as demographically large countries; Morocco (tradition/historical reason: Morocco first recognized USA in 1776) and Egypt in Africa (tourist from USA and European countries where McDonalds is already present), Chile (fast growing economy – "Pacific puma"); Arabian Peninsula (oil reserves)***

- ***1995-1999 lower income Eastern European countries, India (their participation on world market, english speaking), South Africa (after Apartheid includes in global economy, foreign companies enter on South Africa's market); Peru, Equador and Colombia, Paraguay (involved in APEC – USA interest in economies of these countries; Peru and Colombia are also known as "Pacific pumas" – alongside Chile and Mexico)***

- ***from 2000: Vietnam (opens to western economies - in 2001 had one of the highest economic growth rates (7.1 percent) in the world; in October 2001, the U.S. Congress approved the bilateral trade bill with Vietnam – that provided an important new opening for Vietnam to export to the large U.S. market and eventually to join the WTO), Bosnia and Herzegovina (after the war)***

Level Marking:
- indication of global ie. more than one region plus;
- 1 - something related to a place if just explanation
- 2. either well described or some description with good explanation
- 3 well developed answer with some detail - global spread

5.   Describe and explain why some groups of people gain from the growth of TNCs in the host countries while others lose out.

....

Answer: 4m
Answer might include some examples which can be credited. Does not need to be in table format.

	Gains	Losses
Investment	Some investment will help the local area and improve such things as number of doctors; availability of shops	Most of the profits go to the country of origin and are not use for the benefit of local people.
Technology	TNCs bring in technology host countries don't have. People have access to computers, etc. at lower prices	Only people with improved incomes will be able to access the good and services eg. internet, smart phones, etc.
Transport	There will be better access to public transport and better roads in areas close to the TNC	Improved access and transport routes are only available in areas where they help the company.
Employment	TNCs create jobs for the local population	Often jobs are low skilled. TNC brings in people to do highly skilled jobs, eg. British into Malaysia
Growth poles	TNCs act as growth poles for other industries and services which result in more local shops; access to doctors and schools	Access to services is varied across the country so only some people benefit from services such as schools and doctors.
Environment	TNCs bring with them the technology to combat pollution, etc. so people can benefit from clean water from the tap; air conditioning, etc.	TNCs are often accused of cutting corners with safety and pollution. Local laws are often less stringent in host countries and so there can be unhealthy living conditions such as toxic water supplies.

Level marking:

1 - lacks detail, one idea explained
2 - gains or losses but more than one idea (explanation)
3 - gains and losses - one in depth or detail
4 - both gains and losses with more detail and depth