SECOND SEMESTER EXAMINATION
FOUNDATION IGCSE:: 2013-2014
SUBJECT: EVM

CLASS: VIII
NAME: ....................
DATE: 14.03.2014

MARKS: 100
TIME: 2 Hrs

INSTRUCTIONS:
Write your name on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, and glue or correction fluids.
Answer all questions.
At the end of the examination, fasten all your work securely together

<table>
<thead>
<tr>
<th>Q. No.</th>
<th>Marks</th>
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<td>TOTAL</td>
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</table>
1. Look at the image below and answer accordingly:

![Soil profile diagram]

a. Label i) O __________
   ii) A __________
   iii) B __________
   iv) C __________ [2]

b. What is Soil? ___________________________________________________________________________ [1]

c. Give two reasons why the topsoil is the most important part of a soil.
   ______________________________________________________________________________________ [2]

d. i) State three reasons why loamy soils are good for farming.
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________ [3]
ii) Draw a bar graph to show the texture of a silty loam soil.
   Sand 30%       clay 20%       silt 50%

c. Look at the image below and answer the questions:

   i) What has affected the soil above?

   ii) List the environmental consequences of the overuse of fertilizers and pesticides.

   [1]

   [2]
f. Write the difference between,

<table>
<thead>
<tr>
<th>Domestic waste</th>
<th>Nuclear waste</th>
<th>Toxic waste</th>
</tr>
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<tbody>
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<td></td>
<td></td>
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<tr>
<td>Example:</td>
<td>Example:</td>
<td>Example:</td>
</tr>
</tbody>
</table>

[Total: 20 marks]

2. Complete the food chain of the southern oceans:
a. Give three reasons why cold waters are rich in life?

b. Write down all the evidences to support the view that 'human activities in the southern Oceans have been predatory and non-sustainable'.

c. i) Name two international agreement that apply to this region.

ii) Will they make for a sustainable future? Explain your views on this.
iii) Complete the conversation between the penguins discussing global warming in Antarctica:

![Penguins with speech bubbles]

[2]

d. Complete the flow chart on water problems for ocean resources.

[3]
e. Why are these problems and issues international ones?

3. **Sunken Great Lakes Oil Pipeline Raises Spill Fears**
   abcNews, March 3, 2014
A strait of Mackinac is drawing attention for something which some consider a symbol of the dangers lurking in the nation's sprawling web of buried oil and natural gas pipelines.

Stretched across the bottom of the waterway at depths reaching 270 feet are two 20-inch pipes that carry nearly 23 million gallons of crude oil daily. They are part of the 1,900-mile Lakehead network, which originates in North Dakota near the Canadian border. A segment known as Line 5 slices through northern Wisconsin and Michigan's Upper Peninsula before ducking beneath the Straits of Mackinac and wincing up in Sarnia, Ontario.

The pipes were laid in 1953. They've never leaked, according to the system's owner, Enbridge Energy Partners LP, which says the lines are in good shape and pose no threat.

Concern has risen in the past year following serious spills in Arkansas and North Dakota, and as the government weighs the proposed Keystone pipeline project that would stretch from Canada to the Gulf of Mexico. The issue is especially sensitive in Michigan, where another Enbridge line ruptured in 2010, spewing more than 840,000 gallons of crude into the Kalamazoo River and a tributary creek.

a. What are the sources of oil spill?

b. Which areas are most at risk of marine pollution?

c. What are the impacts of these pollutants on marine life?
d. With the help of the data given below, draw a bar graph to show the amount of oil spills in tonnes.

<table>
<thead>
<tr>
<th>Country</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>2810</td>
</tr>
<tr>
<td>Canada</td>
<td>4830</td>
</tr>
<tr>
<td>Singapore</td>
<td>2500</td>
</tr>
<tr>
<td>Norway</td>
<td>4800</td>
</tr>
<tr>
<td>Nigeria</td>
<td>5000</td>
</tr>
</tbody>
</table>
d. Describe the methods with diagrams used to clean up the oil spill.

e. Look at the pie chart below and interpret it.
4. a. The outline map of Japan is given below. Name and mark the ocean currents.

b. What do you mean by overfishing?

c. What two factors influence the movement of ocean currents?
d. Total Japan's fish catch given in percentage; make a pie chart to represent the data.

<table>
<thead>
<tr>
<th>Fish</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluefin Tuna</td>
<td>45%</td>
</tr>
<tr>
<td>Squids</td>
<td>5%</td>
</tr>
<tr>
<td>Cod</td>
<td>14%</td>
</tr>
<tr>
<td>Clams</td>
<td>7%</td>
</tr>
<tr>
<td>Oysters</td>
<td>1%</td>
</tr>
<tr>
<td>Salmon</td>
<td>28%</td>
</tr>
</tbody>
</table>

e. Explain how the use of new technology leads to overfishing.
f. Name and describe the strategies used to manage fish stocks.

5. Look at the picture below, read the information given about Peru, and answer the questions asked.
Area of Peru: 1 285 216 sq km
Population: 30 million
Children per woman: 2.6
Life expectancy: 74 years
Currency: soles (2.9 = 1US$)
Language: Spanish, indigenous languages
Climate: driest in the west, cold mountains in the centre, equatorial in the east
Terrain: western coastal plain, high Andes mountains in the centre, eastern lowlands in the Amazon Basin
Main exports: minerals, such as copper, gold, zinc and many others, fishmeal and agricultural produce.

Peru is a developing country with large mineral resources in the Andes mountains. The coastal waters are excellent fishing grounds. Economic growth has resumed after the world recession and levels of poverty have been reduced in recent years. Peru has developed many trade links with other countries.
a. What are the advantages for Peru of improved trade links with other countries?

b. Lake Titicaca is a large lake at 3800m above sea level. Many indigenous communities farm the surrounding land; other communities fish in the lake or carry out informal mining along the rivers that flow into the lake. The lake has provided a supply of fish to local people for many years. Some fish are also sold in markets in local towns. To increase the fish catch a new species called 'pejerrey' was introduced. They are now caught in large numbers. However, a native fish species called 'carache' is now rarely caught, although it was common in the past.

![Pejerrey Fish](image1)

pejerrey fish

![Carache Fish](image2)

carache fish

i) Suggest how the introduction of new species like pejerrey could alter the natural lake ecosystem.

The pejerrey is now the main fish caught and sold in local markets. The carache fish is only used to make soup. Some people were worried that these fish were not safe to eat as a result of mining in the surrounding mountains. They asked a scientist to test fish muscle for mercury (a heavy metal).

The scientist used the following method:
- catch fish of both species in five different locations on the lake
- visit three fish markets and buy fish of both species
- record the length of all these fish
- remove a piece of muscle tissue of the same size from just behind the gills of each fish
- pack the muscle samples in ice and send to the laboratory

ii) Suggest why the scientist collected fish from three markets as well as catching fish.
iii) Why did the scientist pack the muscle samples in ice?

(iv) The average (mean) results for analysis of the fish of differing lengths are shown in the table below.

<table>
<thead>
<tr>
<th>Pejerrey fish</th>
<th>Length/mm</th>
<th>Average mercury concentration of fish/ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>180</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>0.25</td>
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<tr>
<td>400</td>
<td>0.40</td>
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</tr>
<tr>
<td>440</td>
<td>0.45</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carache fish</th>
<th>Length/mm</th>
<th>Average mercury concentration of fish/ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>0.20</td>
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<tr>
<td>140</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>0.70</td>
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</tbody>
</table>

Key
- Pejerrey fish
- Carache fish
v) The safe limit for mercury concentration in fish that are being eaten is 0.30ppm. Show clearly on the graph the maximum length for each fish that can be safely eaten. Write the maximum length that can safely be eaten in the spaces below.
pejerrey fish ____________________ carache fish ____________________ [2]

vi) Suggest reasons to explain the relationship between mercury concentration and fish length.

[2]
c. The scientist discovered that a mining community 100km from the lake was using mercury to extract gold from a river flowing into Lake Titicaca. He took water samples at intervals down the river between the mining community and the lake. The results are shown in the table.

<table>
<thead>
<tr>
<th>distance downstream from the mining community/km</th>
<th>mercury concentration in the river/ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>580</td>
</tr>
<tr>
<td>10</td>
<td>92</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>1</td>
</tr>
</tbody>
</table>

The scientist decided that this mining was not the main source of mercury entering Lake Titicaca. Explain why he came to this decision.

[2]
d) Lake Titicaca is the habitat of many endemic species (found nowhere else in the world). One of these species, the Lake Titicaca frog, is endangered and its population is in decline.

**Life cycle of the Lake Titicaca frog**

- Young frogs live on marshland beside lake
- Tadpoles (larval stage) feed in water
- Adult frog
- Fertile eggs laid in water
- Mate in water

When visiting the local markets the scientist noticed that some frogs were for sale. He decided to carry out another survey of six markets to try to estimate how many frogs were being caught for sale in the area. He decided not to buy any frogs.

i) Why did the scientist decide not to buy any frogs?

ii) Describe how the scientist should undertake the survey to achieve his aim.

[Total: 20 marks]