GRADE 11 RESOURCES & SUSTAINABILITY 2021

WORKSHEET 1

Match the list of terms below with the statements (1–7). Write only the number (1 –6) and the correct answer, for example 7. Geography.

Fracking; Extraction; Thermal energy; Conventional; Biomass energy; Non-Conventional; Biogas energy

1. Energy transferred from one source to another
2. The removal of raw materials from its natural environment
3. Energy of the usual type, normal or traditional
4. Energy sources that provide an alternative
5. The energy produced by heat and from the methane gas that is released, as plant and animal matter decompose
6. The energy produced by burning vegetation and organic material
7. Extracting natural gas from sedimentary rocks. (7 x 1) (7)

[z:/ECNOV143.2]

WORKSHEET 2

Choose the correct word/term in brackets to make each of the following statements TRUE. Write only the correct word/term next to the question number (1 –5) in the ANSWER BOOK.

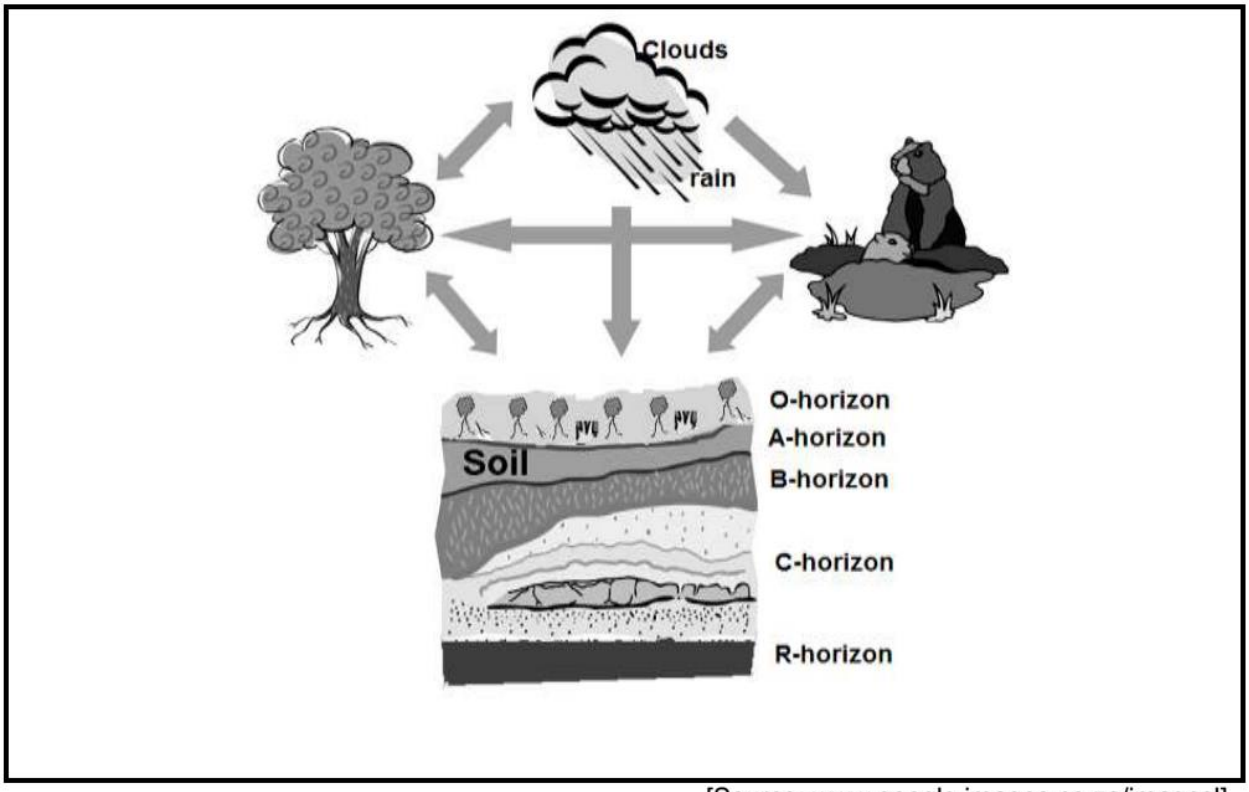
1. A (natural/economic) resource is obtained from the environment. (1 x 2) (2)
2. (Biotic/Abiotic) resources consist of non-living hings. (1 x 2) (2)
3. (Eluviation/Illuviation) occurs when soil particles are transported in solution or suspension downward through soil. (1 x 2) (2)
4. Hydroelectricity is a (renewable/non-renewable) form of energy. (1 x 2) (2)
5. (Gravity/Deforestation) is a natural cause of soil erosion. (1 x 2) (2)

[z:/GDENOV133.2]

WORKSHEET 3

Study FIGURE 3.2 which illustrates soil forming factors and soil horizons. Answer the questions below by providing a term/word from the figure that best fits the description.

FIGURE 3.2: SOIL-FORMING FACTORS AND SOIL HORIZONS



[Source: www.google images.co.za/imagesl]

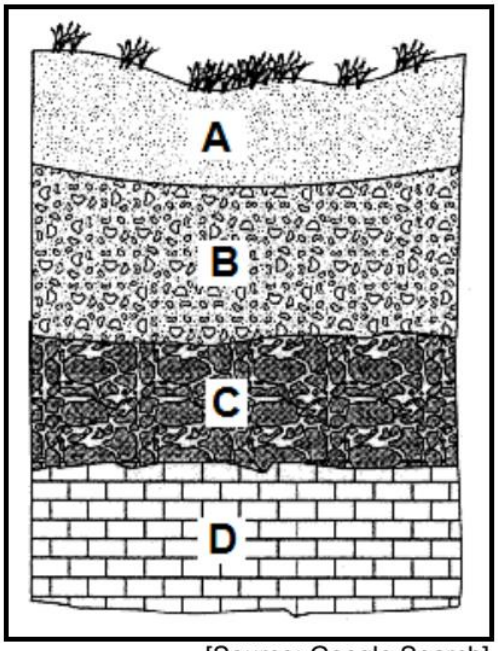
1. Name a passive soil forming factor
2. In which horizon does the parent rock occur?
3. Name the horizon that consists of weathered parent material
4. The horizon that is aided by the decomposition of animal and plant material
5. The horizon where leaching occurs
6. The horizon that determines the texture, mineral composition and weathering speed of the soil
7. The active soil forming factor that determines the process of salination (7 x 1) (7)

[z:/ECNOV173.2]

WORKSHEET 4

Refer to FIGURE 4.4 showing a typical soil profile.

FIGURE 4.4: SOIL PROFILE



[Source: Google Search]

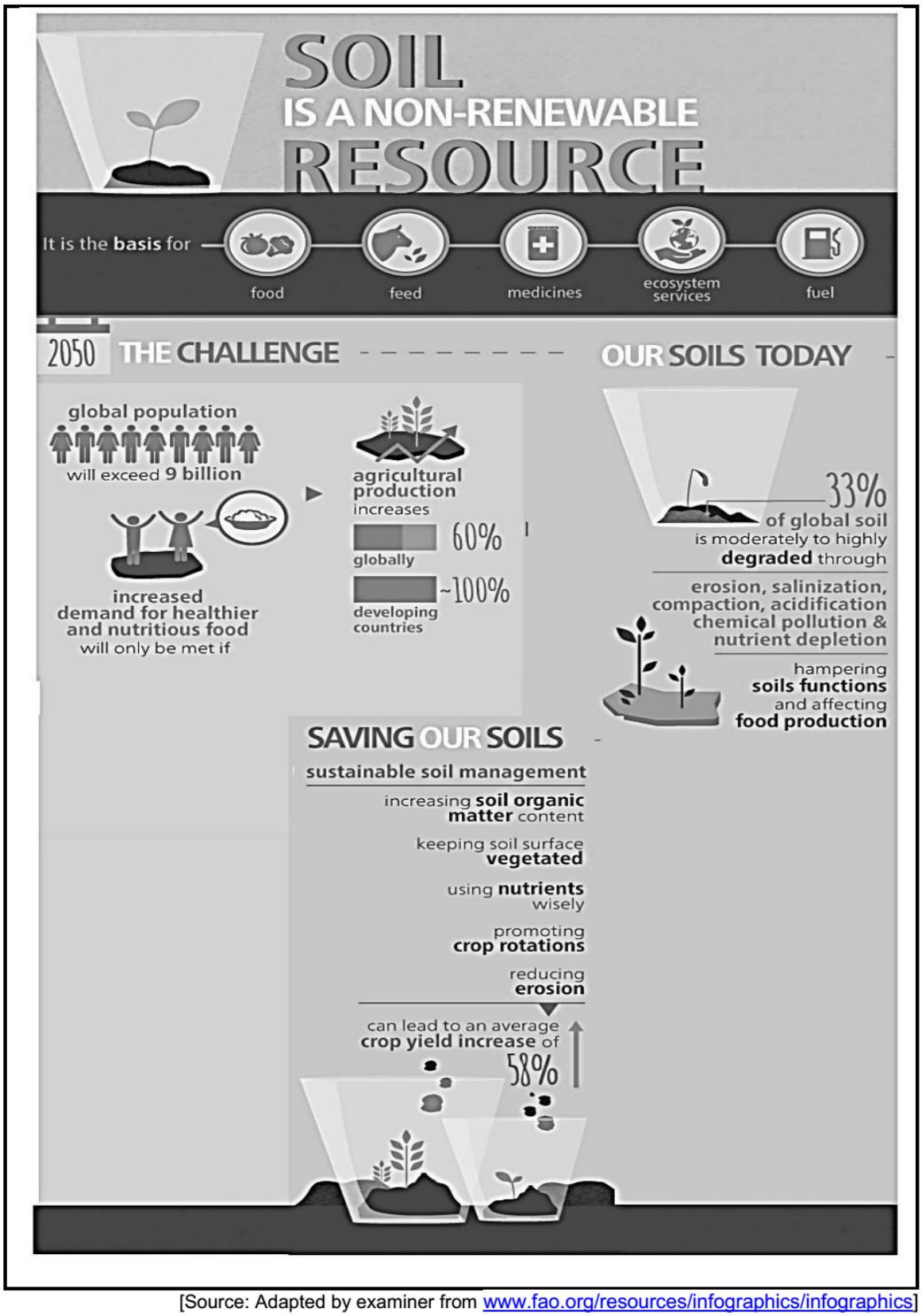
1. What is a *soil profile*? (1 x 2) (2)
2. What is a *soil horizon*? (1 x 2) (2)
3. Of what importance is soil horizon **A** to humans? (2 x 2) (4)
4. In which soil horizon does leaching mainly occur? (1 x 2) (2)
5. What role does bedrock (**R**) play in soil formation? (1 x 2) (2)
6. Explain the role of climate in soil formation. (2 x 2) (4)
7. Why can one say that the soil profile illustrated in FIGURE 4.4 is that of mature soil? (1 x 2) (2)

[z:/GDENOV134.4]

WORKSHEET 5

Study the information in FIGURE 3.6 (below) about soil as a non-renewable resource.

FIGURE 3.6: SOIL AS A NON-RENEWABLE RESOURCE



[Source: Adapted by examiner from www.fao.org/resources/infographics/infographics]

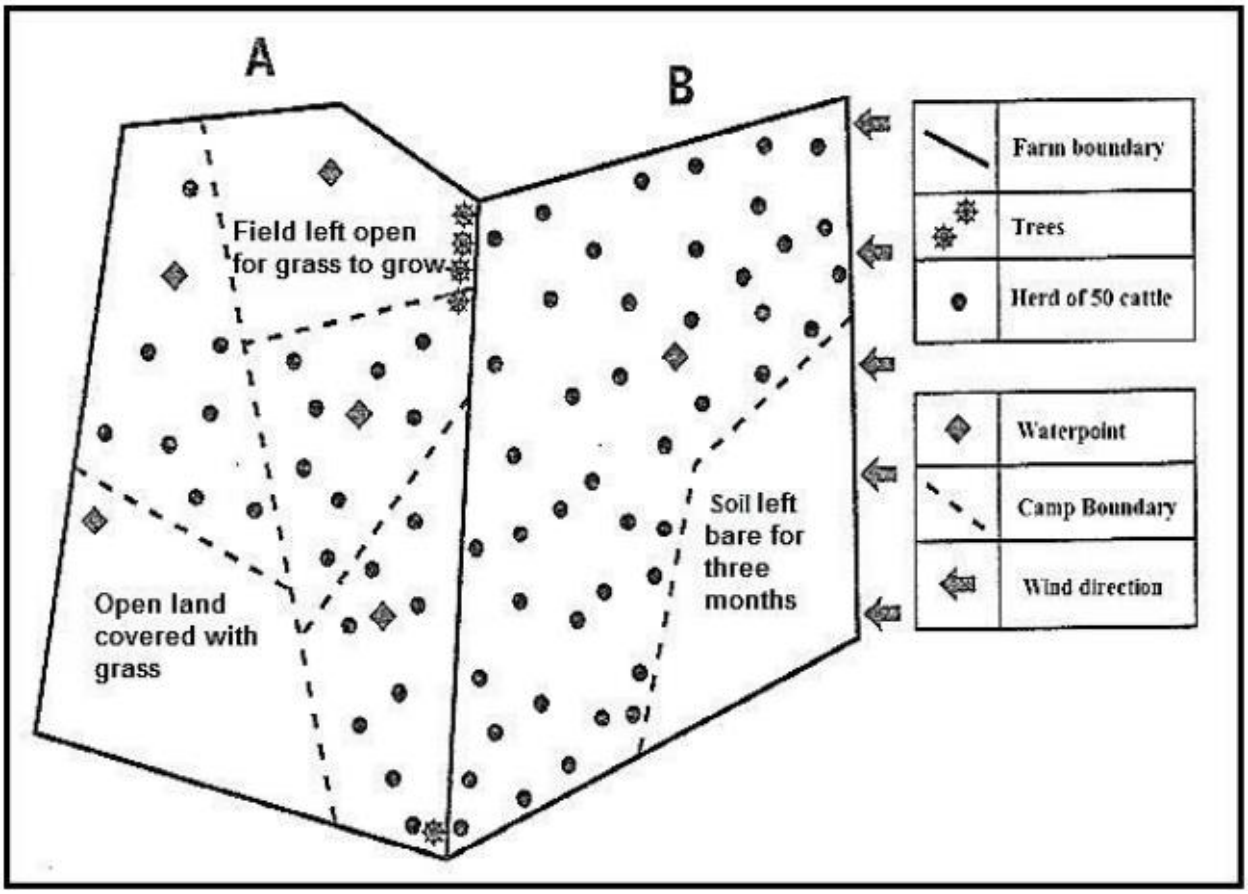
1. Name any ONE component of soil. (1 x 1) (1)
2. What is the biggest challenge facing soil as a resource by 2050? (1 x 1) (1)
3. Mention how this challenge (answer to QUESTION 2) will impact on soil resources. (2 x 1) (2)
4. From the information in FIGURE 3.6, provide TWO effects of moderate to highly degraded soil. (2 x 1) (2)

5. Refer to sustainable soil management.
   (a) What is the ultimate positive effect of sustainable soil management? (1 x 2) (2)
   (b) In a paragraph of approximately EIGHT lines, explain how 'keeping soil vegetated' and 'promoting crop rotation' as sustainable soil management processes, will help to save soil. (4 x 2) (8)
   [z:/ECNOV193.6]

WORKSHEET 6

Study FIGURE 4.4 that depicts 2 farms in the same area. One farmer tries to reduce soil erosion, while the other farmer shows no interest. Answer the following questions.

FIGURE 4.4

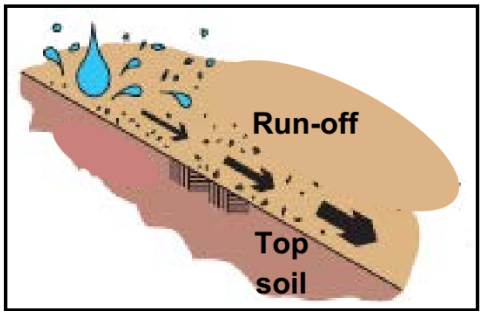


1. What is soil erosion? (1 x 2) (2)
2. Refer to the diagram and give THREE causes of soil erosion. (3 x 1) (3)
3. Which farmer (**A** or **B**) did not put measures in place to prevent soil erosion? (1 x 1) (1)
4. Describe the measures the other farmer implemented to minimise the impact of soil erosion. (2 x 2) (4)
5. Write a short paragraph (not more than SIX lines) to describe the impact of soil erosion on humans and the environment. (6 x 1) (6)
   [z:/ECNOV134.4]

WORKSHEET 7

Refer to FIGURE 3.3 showing causes of soil erosion and answer the questions that follow.

FIGURE 3.3: SOIL EROSION



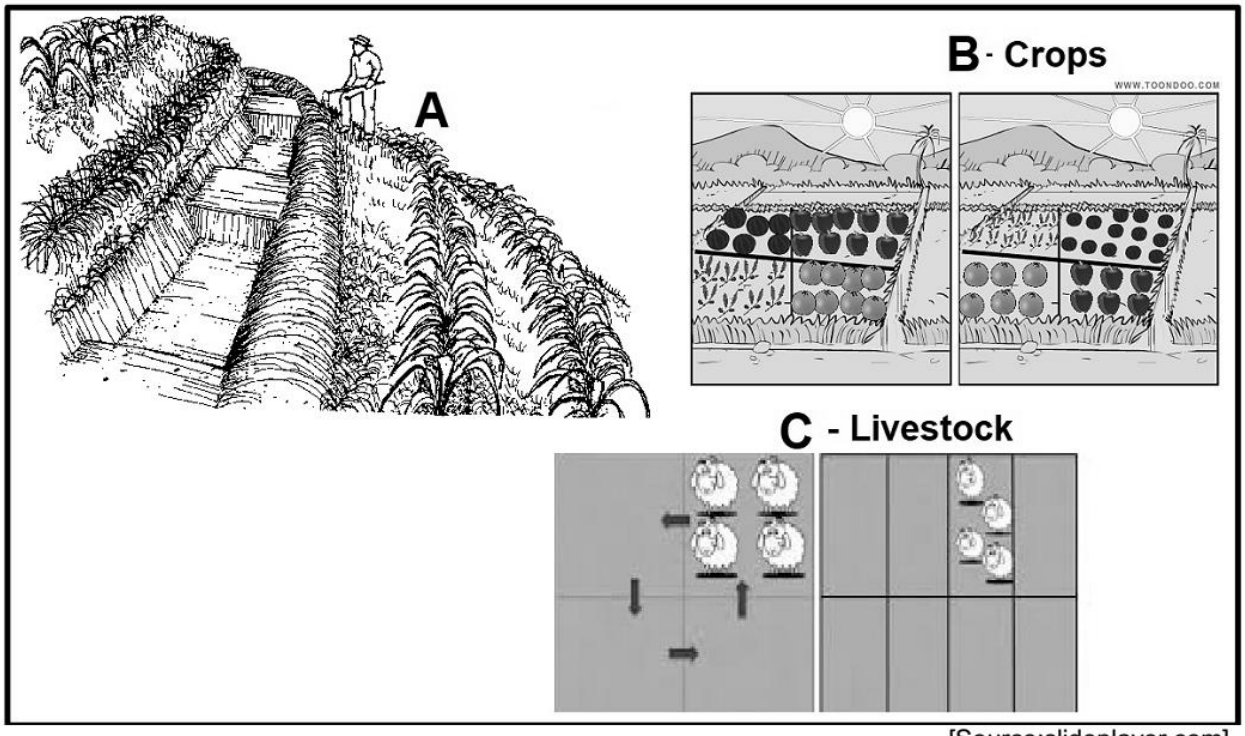
1. Identify TWO causes of soil erosion visible in the diagram. (2 x 2) (4)
2. Briefly explain the process of soil erosion illustrated in the diagram. (2 x 2) (4)
3. Discuss any THREE effects of soil erosion on the environment. (3 x 2) (6)
4. Write a short paragraph in which you explain sustainable management strategies that can be used to prevent and control soil erosion. (6 x 2) (12)

[z:/GDENOV133.3]

WORKSHEET 8

FIGURE 3.6 shows images of soil conservation.

FIGURE 3.6: IMAGES OF SOIL CONSERVATION



[Source:slideplayer.com]

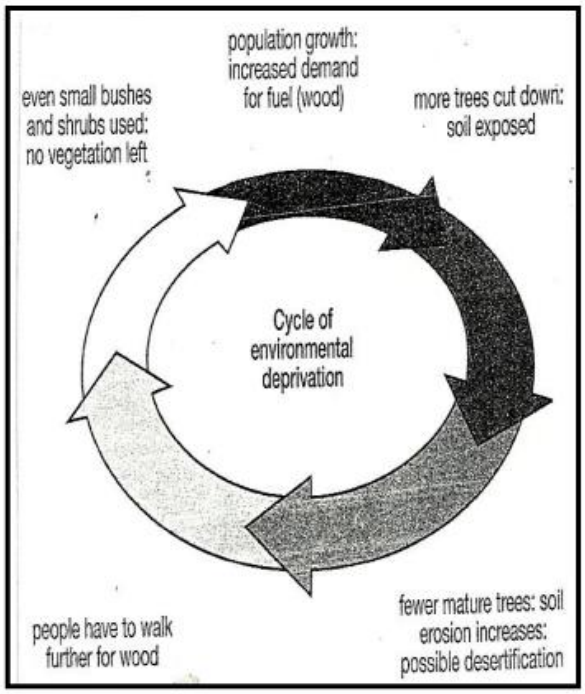
1. What is *soil erosion*? (1 x 1) (1)
2. Name the strategies used to reduce soil erosion in **A** and **B**. (2 x 1) (2)
3. Explain how the rotating strategy at **C** helps in reducing soil erosion. (2 x 2) (4)
4. In a paragraph of approximately EIGHT lines, discuss reasons why soil management is important

for farmers. (4 x 2) (8)
[z:/ECNOV193.6]

WORKSHEET 9

Study the passage and the diagram in FIGURE 3.4 and answer the following questions.

FIGURE 3.4



The Republic of Congo (DRC) has the largest tropical rainforest in Africa, covering over 100 million hectares. However, the future of the DRC's forests is in question due to population growth exceeding 3%. The demand of fuelwood exceeds availability.

Plantation agriculture and commercial farming are also on the increase. Both of these threaten the DRC's extensive rainforest.

1. List TWO natural resources found in the DRC. (2 x 1) (2)
2. Explain why the rainforests of the DRC are under threat. (1 x 2) (2)
3. Why is there such a big demand for fuelwood in this country? (1 x 2) (2)
4. Describe the impact that the increasing demand for fuelwood has on the environment in this area of the DRC. (2 x 2) (4)
5. Why are agriculture and commercial farming threatening to the sustainability of the rainforests? (1 x 2) (2)
6. It can be explained that fuelwood is no longer a renewable resource. Explain why. (1 x 2) (2)

[z:/ECNOV133.4]

WORKSHEET 10

Choose the correct term/word in brackets that will make each of the following statements TRUE.

1. The factors caused by the work of plants, animals and humans are known as (biotic / abiotic) factors.
2. (Deforestation / Afforestation) is planting trees on land that was previously wooded but has been cleared.
3. To keep areas of the earth in their present condition, untouched by humans, is known as (conservation / preservation).
4. The (Kyoto Protocol / Montreal Protocol) signed in 2002 requires countries to reduce greenhouse gas emissions.
5. Wind power is (reliable / unreliable) throughout the year.
6. Hydro-electricity is a (conventional / non-conventional) source of energy.
7. The power utility (Eskom / Koeberg) produces most of the energy for the people of South Africa. (7 x 1) (7)

[z:/ECNOV1934.2]

WORKSHEET 11

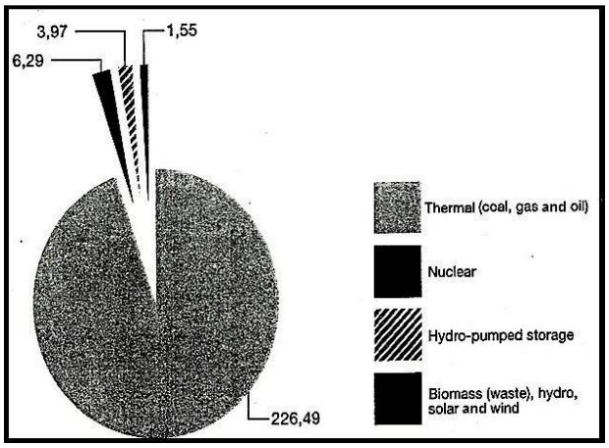
South Africa has rich coal deposits in the north-east of the country, and as such the majority of South Africa's coal-fired plants are located in Mpumalanga. Historically, this has given South Africa access to cheap electricity, but it is also one of the leading causes why the country is on the top 20 list of carbon dioxide emitting countries.

1. Coal is not a sustainable source of energy. Explain this statement. (2 x 2) (4)
2. State TWO environmental impacts of coal mining and thermal power stations. (2 x 2) (4)
3. Discuss THREE management strategies that can be put in place to reduce South Africa's carbon emissions from coal-fired power stations. (3 x 2) (6)
   [z:/GDENOV133.4]

WORKSHEET 12

Study the graph, FIGURE 3.5 and answer the following questions.

FIGURE 3.5

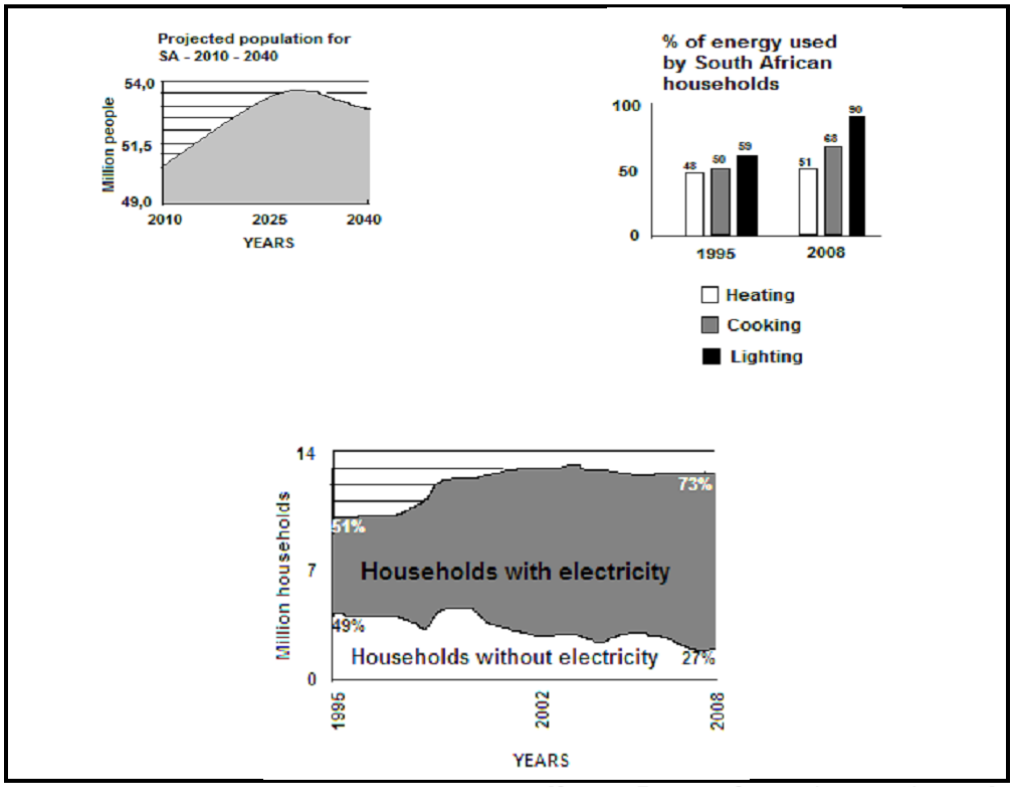


1. Why is South Africa so dependent on coal as a source of energy? (1 x 1) (1)
2. Refer to the expression “carbon footprint” to explain the environmental effects of coal. (2 x 2) (4)
3. Why does nuclear energy have a bad name? (1 x 1) (1)
4. Does hydro-power use a renewable or non-renewable resource? Provide a reason for your answer. (2 x 1) (2)
5. Why is the generation of energy from renewable resources unreliable? (1 x 2) (2)
6. Write a short paragraph (not more than SIX lines) to suggest management strategies the South African government can put in place to help consumers reduce their carbon footprint. (3 x 2) (6)
   [z:/ECNOV133.5]

WORKSHEET 13

Study FIGURE 3.5, showing data information about South Africa’s energy usage and needs.

FIGURE 3.5: SOUTH AFRICA'S ENERGY NEEDS



[Source: *Focus on Geography-promotion copy*]

1. Which household unit consumes the most energy in South Africa? (1 x 1) (1)
2. State how the projected population from 2010 to 2030 will influence energy consumption. (1 x 1) (1)
3. Describe the trend in the graph which illustrates South Africa's households with and without electricity. (1 x 2) (2)
4. Explain how the information in the graphs will negatively impact the economy of South Africa. (2 x 2) (4)
5. In a paragraph of approximately EIGHT lines, comment on how individuals in households of South Africa can use electricity more sustainably. (4 x 2) (8)

[z:/ECNOV173.5]

WORKSHEET 14

Identify the use of the following natural resources as renewable or nonrenewable. Write ONLY renewable or non-renewable next to the question number (1 –8).

1. A company that uses bio-thermal methods to generate energy.
2. An iron company that makes corrugated iron for roofs.
3. A commercial farmer that cultivates organic vegetables.
4. A sawmill that cuts wood for the furniture industry.
5. A company that uses filters on their chimneys to reduce carbon dioxide emissions.
6. A mining company which produces gold for the jewellery industry.
7. A petrochemical company that manufactures fuel for motor vehicles.
8. A utility company that provides huge amounts of water to the municipality. (8 x 1) (8)

[z:/ECNOV174.2]

WORKSHEET 14

Refer to FIGURE 4.5, showing the use of a non-conventional energy method.

FIGURE 4.5: NON-CONVENTIONAL ENERGY

[Source: http://*www.epaw.org/multimedia*]

1. Which non-conventional energy is being depicted by the cartoonist? (1 x 1) (1)
2. Name TWO disadvantages, illustrated in the diagram, of this type of energy being generated. (2 x 1) (2)
3. Describe TWO advantages of this type of energy being generated. (2 x 2) (4)
4. Refer to the heading 'Greening the Land'.
   (a) What is meant by the heading '*Greening the Land*'? (1 x 2) (2)
   (b) Explain how greening of the land will benefit the economy of South Africa. (3 x 2) (6)
   [z:/ECNOV174.5]

WORKSHEET 16

Read through the newspaper article on 'Wind turbines', FIGURE 3.6, to answer the following questions.

FIGURE 3.6: NEWSPAPER ARTICLE

Van Stadens wind turbines set for Eskom grid hook-up

SA to enter clean energy era

Clean green electricity will become a reality later this week when South Africa's first utility-scale, privately owned wind farm connects to the electricity grid.
All eyes will be on the nine Metro's and turbines at Van Stadens near Port Elizabeth as the developers test the R500 million state-of-the-art renewable energy equipment in the build-up to the official 27MW facility to the Eskom grid in just over two months' time.

Afri-Coast Engineers director Donald McGillivray – who has spent 10 years pioneering renewable wind energy in South Africa – said after a year of construction on the outskirts of Blue Horizon Bay, they were now counting the days until they started supplying much needed power to the Nelson Mandela Metro from February next year. "It is exciting to see everything coming together so quickly," he said.
Mcgillivray said the hot commissioning of the project – which will start one turbine at a time was critical to ensuring the success of the project.

Erected using the biggest crane on the African continent, the Van Stadens project has, however, not all been a breeze for the developers after a handful of local residents complained about the towering wind turbines on a hill above the seaside village.
The objections from a few wealthy landowners have come despite the development obtaining all environmental approvals and permits required and guaranteeing impoverished local township residents a substantial portion of the project equity and revenue over the next 20 years.

Several costly legal challenges have fallen flat. "The fourth-generation wind turbines are quieter than older wind turbines and all wind farms have to comply with strict environmental authorization requirements, which include noise emissions," said McGillivray. "The wind farms will improve both the quality and reliability of the electricity supply to Blue Horizon Bay and surrounding areas.

[Source: David MacGregor (Senior Reporter – *Daily Dispatch*)]

1. Explain what *wind energy* is. (1 x 2) (2)
2. Is wind energy a form of conventional or non-conventional energy? (1 x 1) (1)
3. Interpret what is meant by the following statement: "SA to enter clean green energy era". (1 x 2) (2)
4. '... the Van Stadens project has however, not all been a breeze for the developers after a handful of local residents complained about …' State TWO possible complaints that could have been levelled by the residents against these wind turbines. (2 x 2) (4)
5. In a paragraph of approximately 8 lines explain why the use of energy forms such as wind energy is increasing throughout the world. (4 x 2) (8)

[z:/ECNOV143.6]

WORKSHEET 17

Refer to FIGURE 3.6, a cartoonist's impression of the use of a conventional energy source.

FIGURE 3.6: IMPACT OF CONVENTIONAL ENERGY

[Source: http://www.google.co.za/images]

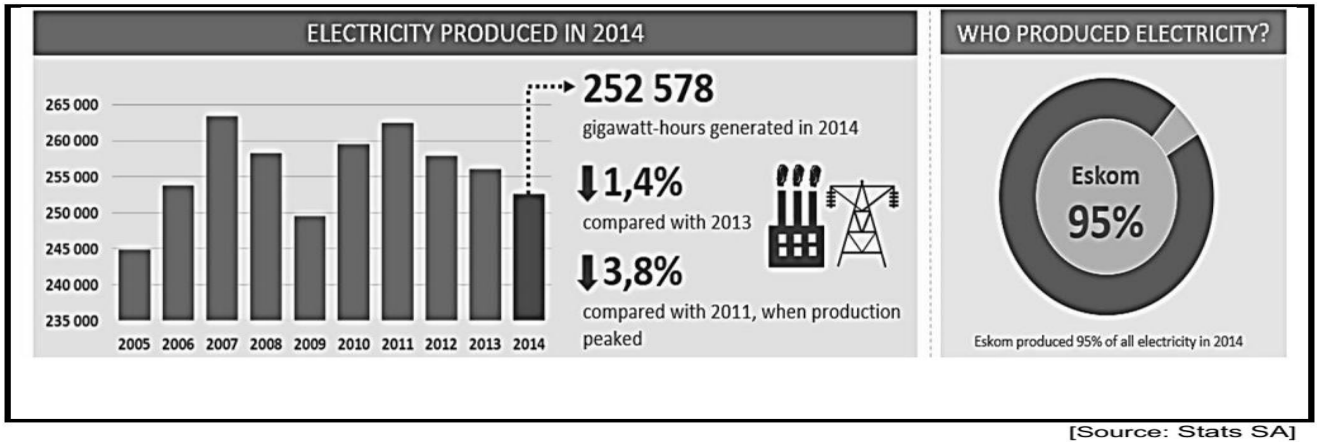
1. Name the type of energy that the industries in the cartoon make use of. (1 x 1) (1)
2. The question being asked in the cartoon is contrary (opposite) to what is depicted in the industries. Substantiate this statement. (1 x 2) (2)
3. Refer to the gasses at **A**, being emitted by the industries.
   (a) Name ONE type of gas being emitted by the industries. (1 x 1) (1)
   (b) Account for TWO types of atmospheric consequences that these gasses are responsible for. (2 x 1) (2)
4. Explain why the answer of 'DENIAL' is appropriate. (2 x 2) (4)
5. Despite the situation depicted in the illustration, the resource being used to generate energy is still important and vital to South Africa's economy. Explain TWO reasons why. (2 x 2) (4)

[z:/ECNOV173.6]

WORKSHEET 18

The statistics in FIGURE 4.6 show the electricity produced in South Africa from 2005 to 2014.

FIGURE 4.6: ELECTRICITY PRODUCED IN SOUTH AFRICA FROM 2005–2014



[Source: Stats SA]

1. What is a *conventional energy source*? (1 x 1) (1)
2. Who produced the most energy in 2014 in South Africa? (1 x 1) (1)
3. How much gigawatt energy was produced in 2014? (1 x 1) (1)
4. Which years produced the least and most energy respectively? (2 x 1) (2)
5. State THREE conventional sources of energy that are used for the generation of energy. (3 x 1) (3)
6. Discuss, in a paragraph of EIGHT lines, the negative impact of conventional energy sources on the environment. (4 x 2) (8)

[z:/ECNOV194.6]

WORKSHEET 19

Read the extract in FIGURE 3.5 referring to Eskom and load shedding.

FIGURE 3.5: ESKOM AND LOADSHEDDING

Eskom says coal stocks have improved, but load shedding risk remains

[Source: Adapted from *fin24* article by Kumalo and Omarjee]

Power utility Eskom says its coal stocks improved over the festive season as it also carried out maintenance at power stations, but the country's power system is still constrained and load shedding remains a risk when businesses and industrial customers return to work next week.

In December, Eskom CEO Phakamani Hadebe said in an interview with Johannesburg-based Radio 702 that there were chances the debt-laden power utility might institute stage-one load shedding from January 15, as businesses which are large users of electricity get back due to re-opening after the year end break.

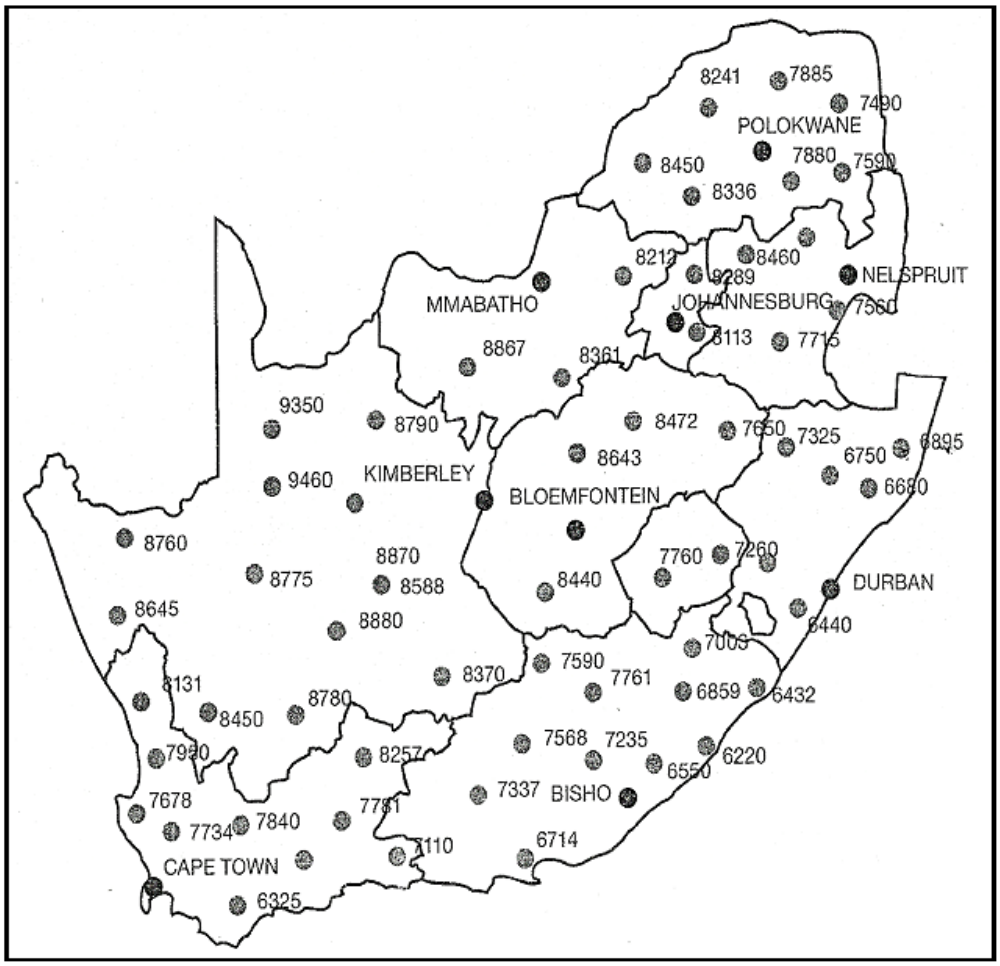
In late November and early December 2018 the power utility repeatedly instituted nationwide electricity rationing due to difficulties in completing scheduled and unscheduled maintenance at power plants, as well as damage to the power transmission lines linking South Africa to the Cahora Bassa hydroelectric dam in Mozambique.

1. What is *load shedding*? (1 x 1) (1)
2. From the extract, suggest TWO possible causes of load shedding. (2 x 1) (2)
3. How do the power stations (picture) harm the environment? (2 x 2) (4)
4. Why is South Africa so dependent on coal as a form of electricity? (2 x 2) (4)
5. Explain why reducing the country's dependency on coal would have a negative impact on the economy. (2 x 2) (4)

WORKSHEET 20

Study the map depicting isolation data in mega joules per square meter (FIGURE 4.5) to answer the following questions.

FIGURE 4.5



1. Explain why the northern parts of the Northern Cape have more favourable terrains for the generation of solar energy. (1 x 2) (2)
2. Why is the north-eastern coast of South Africa less favourable for the generation of solar energy? (1 x 2) (2)
3. For which form of non-conventional energy is the north-eastern coast of South Africa more suitable? (1 x 2) (2)
4. Describe the advantages of solar energy for the environment of South Africa. (2 x 2) (4)
5. Describe the influence of non-conventional energy resources on the economy of South Africa. (2 x 2) (4)

[z:/ECNOV134.5]

WORKSHEET 21

Study FIGURE 3.5, a cartoon about acid rain and answer the following questions.

FIGURE 3.5: ACID RAIN

1. What form of pollution is the cause of acid rain? (1 x 1) (1)
2. Identify the main greenhouse gas associated with acid rain. (1 x 2) (2)
3. Explain TWO detrimental effects of acid rain depicted in the cartoon. (2 x 2) (4)
4. What impact does acid rain have on human health? (1 x 2) (2)
5. Discuss TWO possible solutions to the problem of acid rain. (2 x 2) (4)

[z:/ECNOV143.5]

WORKSHEET 22

Choose a term/word from COLUMN B which matches the description in COLUMN A. Write only the letter (A–H) next to the question number (4.2.1 –4.2.8) in the answer book, for example 4.2.9 I.

COLUMN A		COLUMN B	
1	Electricity produced from turbines powered by falling water	A	Solar energy
2	The amount of carbon dioxide or other carbon compounds in the atmosphere	B	Geothermal energy
3	The increase in unsustainable human activities that increase the emission of greenhouse gases.	C	Land degradation
4	Produced from natural underground heat in rocks and fluids under the earth's surface.	D	Despoliation
5	Damage and exploitation of the of the landscape by humans in search for more resources	E	Hydro power
6	The effect of coal being extracted from the earth by mining	F	Carbon footprint
7	The ability to create and store electricity	G	Global warming
8	The control of the use of energy resources to avoid them being exploited	H	Sustainable energy

[z:/ECNOV144.2]

WORKSHEET 23

Read through the case study on the 'Koeberg nuclear power station', FIGURE 4.5, to answer the following questions.

FIGURE 4.5: CASE STUDY – THE KOEBERG NUCLEAR POWER STATION

Cape Town's main energy supply was initially generated by the Athlone Power station. However because of a rapid increase in the population of Cape Town this energy supply became insufficient and uneconomical because large amounts of coal had to be transported from Mpumalanga to Cape Town.

The Koeberg Nuclear Power Station was built to generate energy to meet Cape Town's increased demand. It is currently the main energy supply of the Western Cape and nuclear energy can also be redistributed to the rest of South Africa during peak demand periods for electricity.

Koeberg Nuclear Power Station was originally located far outside the Cape Town area, but due to rapid growth over the past 20 years, suburban housing developments have moved closer and closer to the power station. The power station enforces strict housing regulations in case of evacuation due to nuclear radiation. For example no high rise buildings are allowed to be built in the vicinity. The power station is surrounded by an extensive nature reserve containing species of birds and small mammal species.

Koeberg Nuclear Power station uses two nuclear reactors to produce nuclear energy. The nuclear reactors are cooled by cold water from the Atlantic Ocean.

1. What mineral is used to produce nuclear energy? (1 x 1) (1)
2. Explain why it was necessary to develop a nuclear power station in the Western Cape. (1 x 2) (2)
3. The production of nuclear energy yields a by-product which is harmful to humans. Name this harmful by-product. (1 x 1) (1)
4. Deduce from the CASE STUDY any TWO safety precautions that have been implemented at the Koeberg Nuclear Power Station. (2 x 2) (4)
5. Despite the risks involved in using nuclear energy, the world's reliance on nuclear energy is increasing. Write a paragraph of approximately 8 lines in which you analyse some of the advantages of nuclear energy. (4 x 2) (8)

[z:/ECNOV144.5]

WORKSHEET 24

The newspaper article in FIGURE 4.3 refers to the future use of nuclear power in South Africa.

FIGURE 4.3: NUCLEAR POWER IN SOUTH AFRICA

While the likely cost of South Africa's planned nuclear power stations has been grabbing headlines, a more pertinent question is: When will they actually be built?

The IRP2010 plan – released in April 2010 – called for the construction of six nuclear stations generating 9,6 GW of energy by 2030, with a new 1 600 MW nuclear power plant to be built every year between 2023 and 2026, and the last two in 2028 and 2029.

In practical terms, a decision needed to be made within a year to go ahead with the first two of those planned six new nuclear stations. That has not happened. It was announced in mid-September that South Africa was postponing a decision by one year for safety reasons after the tsunami incident at Japan's Fukushima nuclear plant in March 2012.

It was stressed that, globally, coal was 'here to stay' as an energy source until at least 2035, despite intense environmental opposition.

– Brendan Ryan (adapted)

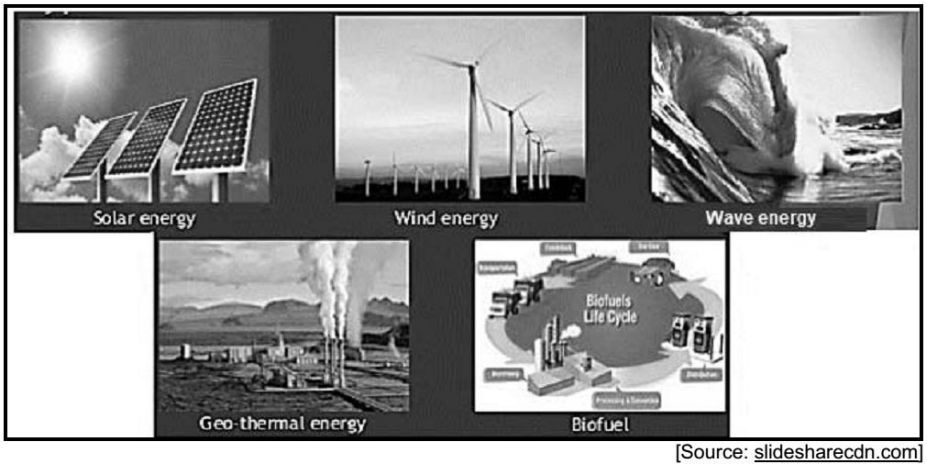
1. What is *nuclear power*? (1 x 2) (2)
2. Where is South Africa's current and only nuclear plant located? (1 x 2) (2)
3. Despite the many advantages of nuclear power, South Africa still relies heavily on conventional energy resources such as coal to generate electricity. Why is this the case? (2 x 2) (4)
4. Give ONE reason for the delay in building nuclear power plants in South Africa. (1 x 2) (2)
5. With reference to the advantages and disadvantages of nuclear power, write a short paragraph on whether you agree, or disagree, with the government's decision to build more nuclear power stations. (6 x 2) (12)

[z:/GDENOV134.3]

WORKSHEET 25

Refer to FIGURE 4.2 on different sources of non-conventional energy. Match the descriptions below with one of the sources of energy. You may use a source of energy more than once. Choose the answer and write only the correct source of energy next to the question number (1–8) in the ANSWER BOOK.

FIGURE 4.2: NON-CONVENTIONAL SOURCES OF ENERGY



[Source: slidesharecdn.com]

1. Energy that is formed from natural organic matter
2. This source of energy is unreliable on calm days
3. Photovoltaic panels convert the sun's light into electricity
4. Energy sourced from beneath the earth's surface
5. This source of energy can cause food shortages
6. The Northern Cape in South Africa is one of the best places for this source of power
7. This source of energy can harm aquatic ecosystems
8. A disadvantage of this source of energy is that it threatens bird life in the countryside (8 x 1) (8)
   [z:/ECNOV194.2]

WORKSHEET 26

Choose the correct word(s) from the list below to complete the following statements. Write only the word(s) next to the question number (1 –15) for example 16 Geography.

land degradation; solar energy; environmental despoliation; carbon dioxide; nuclear energy; coal; global warming; acid rain; sustainable energy; non-conventional energy; topography; humus; carbon footprint; water; non-renewable resources; fair trade; free trade; Rostow; Brandt; quotas; subsidies; GDP; GNP; fossil fuels; biomass; human development index; demographic indicators; import; export; trade surplus; trade deficit

1. ..... occurs when sulphur dioxide and nitric oxide are released into the atmosphere and turn into acids.
2. The parent material, climate and ... are abiotic factors that form soil.
3. Partly decomposed organic material in the soil is called ...
4. Our ... is a measure of all the greenhouse gasses that we individually produce.
5. Energy resources obtained from natural organic plant and animal matter is called ...
6. ... is the damage and deterioration of land caused by human activities.
7. ... resource management is the control of the use of energy resources to avoid them being exploited.
8. Geothermal energy is a ... source of energy.
9. ... refers to the situation where countries do not restrict the prices or the volume of goods imported or exported.
10. ... use the North-South divide to indicate the gap between developed contries of the North and developing countries of the South.
11. Import ... refers to a restriction placed on imported goods in terms of amount of weight, volume or number.
12. ... shows the total monetary value of all goods and services produced in a country in a year.
13. Poorer countries are involved in the ... of manufactured goods of a high value.
14. When the value of money from exports is greater than the money from imports it is called ...
15. ... focus on the quality of life and the standard of living of people in a country. (15 x 1) (15)
    [z:/ECNOV133.1]

WORKSHEET 27

Read the extract in FIGURE 3.5, about the Swiss' vote against nuclear power.

FIGURE 3.5: NUCLEAR POWER STATIONS

SWISS VOTE AGAINST NUCLEAR POWER

Swiss voters have voted overwhelmingly in favour of a policy proposal to phase out nuclear power. Preliminary results of their referendum suggest that voters are in favor of environmentally friendly electric power.

The Swiss government, after the nuclear disaster at Fukushima in Japan, indicated that they wanted to move away from nuclear power. There is no indication when the country's five nuclear power stations will be closed.

Nuclear power currently provides a third of the country's electricity. Solar, wind and hydro power stations are beginning to play a larger role in providing electricity.

[Source: Rose City FM (100point6.co.za)]

1. Name the difference between *renewable* and *non-renewable energy sources*. (2 x 1) (2)
2. State ANY TWO renewable electricity provision resources mentioned in the CASE STUDY that can be used as an alternative to nuclear power. (2 x 1) (2)
3. The Swiss government wants nuclear power phased out. Give TWO reasons for this decision. (2 x 1) (2)
4. Discuss TWO negative effects of nuclear power that will support this decision of the Swiss government as mentioned in QUESTION 3. (2 x 2) (4)
5. If the Swiss government closes the five nuclear power stations, explain TWO negative impacts it could have on the Swiss economy. (2 x 2) (4)

WORKSHEET 28

Refer to FIGURE 4.6, illustrating nuclear power as an energy source.

FIGURE 4.6: ENERGY SOURCES

[Source: https://www.google.com/search?q=cartoons+on+non+conventional+energy]

1. Is nuclear power an example of a *conventional* or *non-conventional* energy source? (1 x 1) (1)
2. Provide a reason for your answer in QUESTION 1. (1 x 1) (1)
3. Quote evidence from the cartoon which indicates that the man is against the demolishing (breaking down) of the nuclear power plant. (1 x 1) (1)
4. Differentiate between *fossil fuels* and *nuclear energy* regarding their greenhouse gas emissions. (1 x 2) (2)
5. Discuss TWO reasons why fossil fuel prices are high. (2 x 2) (4)
6. Explain THREE advantages for the economy of a country that uses nuclear energy. (3 x 2) (6)

[z:/ECNOV194.6]

WORKSHEET 29

Choose a term/word from COLUMN B which matches the description in COLUMN A. Write only the letter (A–H) next to the question number (1 –8) in the answer book, for example 4.2.9 I.

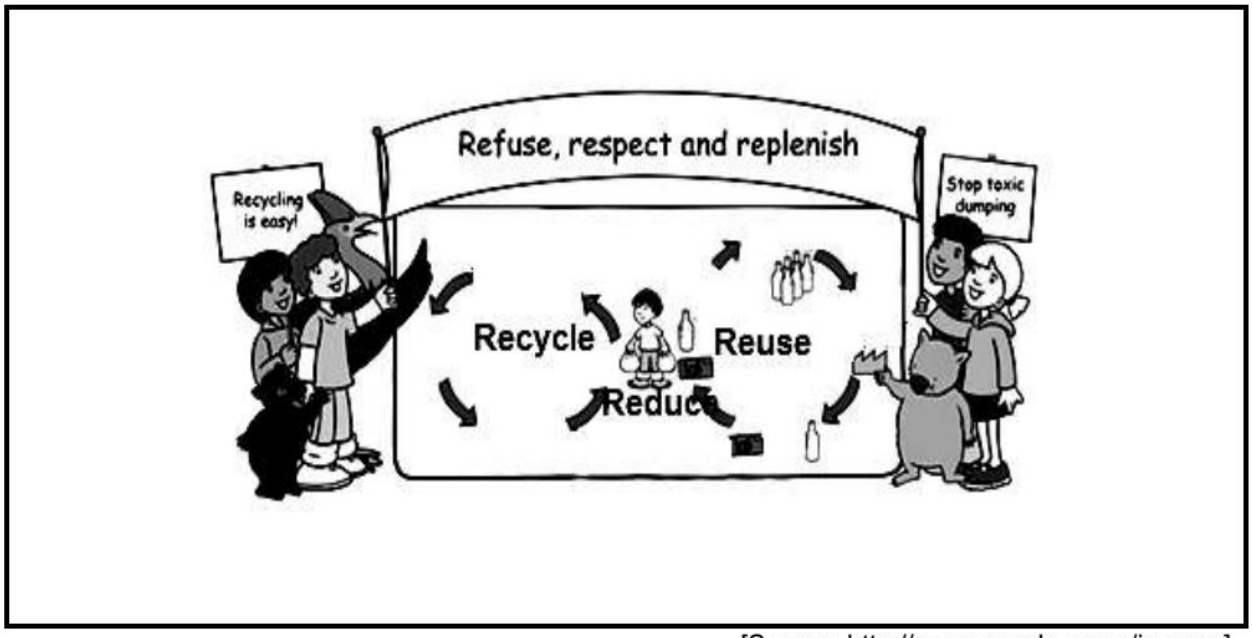
COLUMN A		COLUMN B	
1	Cannot be replaced after they have been depleted	A	Kyoto protocol
2	A form of pollution that can weaken or kill plant life	B	resource
3	A mineral used to generate nuclear energy	C	non-renewable
4	Water, air and solar energy are examples of this type of resource	D	renewable
5	Amount of carbon dioxide emitted into the atmosphere by a person	E	radioactive waste
6	An agreement to reduce the amount of greenhouse gases	F	carbon footprint
7	Material or a product that people find useful	G	uranium
8		H	acid rain

[z:/ECNOV193.2]

WORKSHEET 30

Study FIGURE 4.6 showing the importance of recycling and reuse.

FIGURE 4.6: RECYCLE AND REUSE



[Source: http://www.google.co.za/images]

1. What is the meaning of *sustainable use of resources*? (1 x 1) (1)
2. Differentiate between *recycle* and *reuse*. (1 x 2) (2)
3. Discuss how recycling can cause economic development. (2 x 2) (4)
4. In a paragraph of approximately EIGHT lines, evaluate the impact of recycling and reuse for environmental sustainability. (4 x 2) (8)
   [z:/ECNOV174.6]

WORKSHEET 31

Choose the correct term/phrase that matches the description below. Write the correct term/phrase next to the question number (1 –8).

Acid rain; A-horizon; Natural resources; Biota; Humus; Thermal electricity; Hydro-electricity; Carbon walk; Greenhouse gases; Green economy; Sustainable development

1. Valuable materials/sources such as oil, coal and wood found in nature
2. The organic matter in soil which consists of the remains of plants and animals
3. Aims at reducing environmental damage
4. Energy produced by running water
5. To avoid the depletion of natural resources for use by future generations
6. The type of precipitation that occurs in environments with excessive air pollution
7. Gases that contain carbon dioxide and pollute the atmosphere 3.2.8 Living organisms like plants, animals, insects, etc. (8 x 1) (8)
   [z:/ECNOV183.2]

WORKSHEET 32

Use the case study in FIGURE 4.6 to answer the following questions on Energy Management in South Africa.

What Is Green Tech?

Green tech refers to a type of technology that is considered environmentally friendly based on its production process or its supply chain. Green tech–which is an abbreviation of "green technology"–can also refer to clean energy production; clean energy production is the use of alternative fuels and technologies that are less harmful to the environment than fossil fuels.

Although the market for green technology is a relatively young, it has garnered a significant amount of investor interest due to increasing awareness about the impacts of climate change and the depletion of natural resources.

Green Technology is an umbrella term that describes the use of technology and science to create products and services that are environmentally friendly. Green tech is related to cleantech, which specifically refers to products or services that improve operational performance while also reducing costs, energy consumption, waste, or negative effects on the environment.

The goal of green tech is to protect the environment, repair damage done to the environment in the past, conserve natural resources and preserve the Earth's natural resources. Green tech has also become a burgeoning industry that's attracting enormous amounts of investment capital.

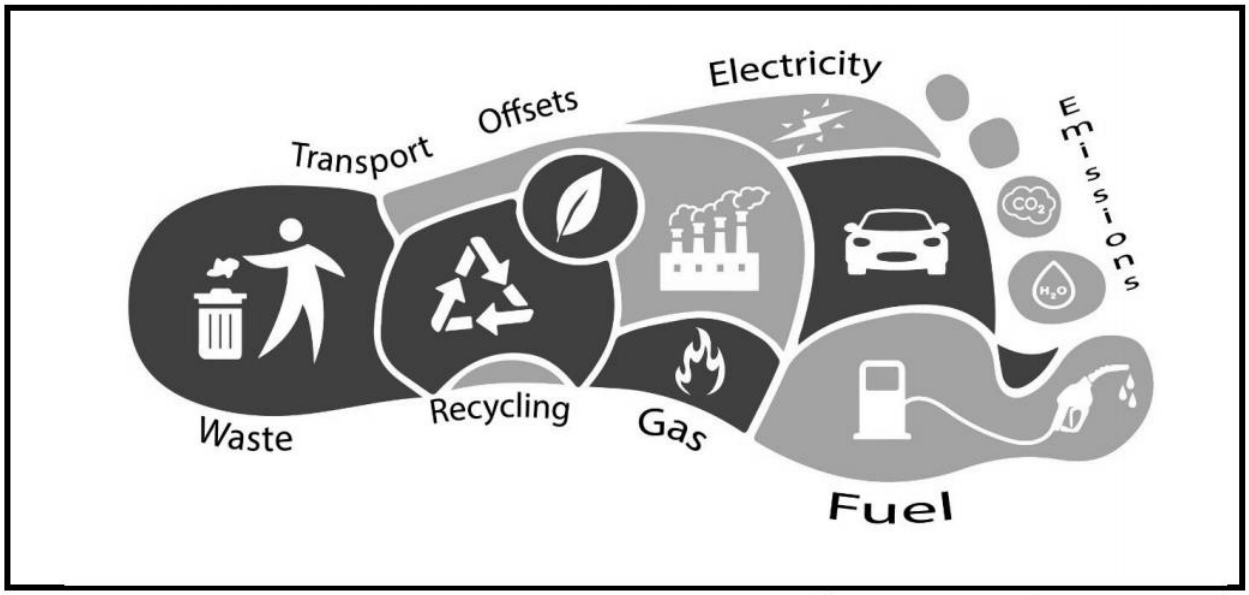
1. Define the concept *'greener technologies'*. (1 x 2) (2)
2. Suggest TWO ways in which South Africa can move towards greener technologies. (2 x 2) (4)
3. What benefits will the use of 'greener technologies' have on the economy and the environment? State at least TWO economic benefits and TWO environmental benefits. (4 x 2) (8)

[z:/ECNOV144.6]

WORKSHEET 33

Study FIGURE 4.5, which illustrates ways in which the carbon footprint can be reduced.

FIGURE 4.5: CARBON FOOTPRINT



[Source: www.google sources.co.za]

1. What is a *carbon footprint*? (1 x 1) (1)
2. Name TWO sources of CO_2 emissions from the sketch. (2 x 1) (2)

3. Explain TWO ways in which households can reduce their electricity use and thus reduce their carbon footprint. (2 x 2) (4)
4. Refer to recycling as a way of reducing the carbon footprint.
   (a) What is *recycling*? (1 x 1) (1)
   (b) Comment on the fact that recycling saves resources and energy. (3 x 2) (6)