Environmental Revision

QUESTION ONE (30 MARKS) COMPULSORY

1. (a) Define the following terms.

i. **E-waste** Trash generated from surplus broken and obsolete electronic devices.
ii. **Waste Management** involves the processes of **waste collection**, transportation, processing, as well as waste recycling or disposal.
iii. **Sustainable Development** meets the needs of the present without compromising the ability of future generations to meet their own needs.
iv. **Global Warming t**he long-term warming of the planet's overall temperature

(c**) Basing on the sources, briefly discuss the various categories of pollution, citing two causes in each case (10 marks).**

Water Pollution Any change in the dynamic equilibrium in aquatic ecosystem, pesticides, oil spillage
Air Pollution
Soil Pollution
Sound Pollution

(e) **Discuss biodegradable wastes, give two examples (4 marks).** a type of waste, typically originating from plant or animal sources, which may be degraded by other living organisms. Biodegradable waste can be commonly found in municipal solid waste as green waste, food waste, paper waste and Plastics.

(e) **Explain how institutions and companies can prevent or reduce e-waste pollution both at global and national scales (8 marks).**

QUESTION TWO (20 MARKS)

2. **Despite having the Environmental laws and regulations in place in Kenya, Environmental degradation is still a big problem. What are some of the factors inhibiting the enforcement of these laws and regulations? Give relevant examples (20 marks).**

limited resources, weak national level environmental governance system, ineffective coordination of institutions, and country characteristics that impact on the implementation process

QUESTION THREE (20 MARKS)

3. (a) **Define the term 'Renewable energy' and briefly discuss any six renewable energy sources of energy viable in Kenya today. Give relevant examples (14 marks).**

energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind,

Solar **energy** · 2) Wind **energy** · 3) Hydro **energy** · 4) Tidal **energy** · 5) Geothermal **energy** · **6**) Biomass **Energy**.

(b) Giving examples, explain any two energy efficiency measures that can be adopted In the following.

i. Motor vehicle industry (2 marks). Use of public means
ii. Power generation and energy conversion (2 marks).
iii. Commercial buildings (2 marks) use of large doors for enough light

QUESTION FOUR (20 MARKS)

4. (a) Discuss the seven basic principles of environmental management and briefly explain their role in the management of the environment (14 marks)..

Polluter Pays Principle (PPP): ... It states that if measures are adopted to reduce pollution, the costs should be borne by the polluters, The principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment

 The User Pays Principle (UPP): ... It is considered as a part of the PPP. The principle states that
all resource users should pay for the full long-run marginal cost of the use of a resource and related services, including any associated treatment costs. It is applied when resources are being used and consumed.

 The Precautionary Principle (PP): ... The main objective of the precautionary principle is to ensure that a substance or activity posing a threat to the environment is prevented from adversely affecting the environment, even if there is no conclusive scientific proof of linking that particular substance or activity to environmental damage.

 Principle of Effectiveness and Efficiency: ... It is essential that efficiency of resources use may
also be accomplished by the use of policy instruments that create incentive to minimize wasteful use. It also applies to various issues of environmental governance by streaming processes and procedures in order to minimize environmental costs.

 The Principle of Responsibility: ... It is the responsibility of all persons, corporations and states
to maintain the ecological processes. Further, access to environmental resources carries attendant responsibilities to use them in an ecological sustainable economically efficient and socially fair manner.

 The Principle of Participation: ... It is the duty of all the persons to participate in collectively environmental decision making activities. Some participation areas are related to the use of trees and other plants, minerals, soils, fish and wildlife for purposes such as materials and food as well as for consumptive and non-consumptive recreation

 The Principle of Proportionality: The principle of proportionality is based on the concept of balance. A balance is to maintain between the economic development on the one hand and environmental protection on the other hand

(b) **State and briefly explain any six global environmental issues common to the information, communication and computer industry in Kenya** (6 marks).

QUESTION FIVE (20 MARKS)

5**. (a) Explain the advantages of higher energy efficiency in a typical electricity generating plant and a computer manufacturing industry (14 marks).**

Environmental: Increased efficiency can **lower greenhouse gas (GHG) emissions and other pollutants, as well as decrease water use**. Economic: Improving energy efficiency can lower individual utility bills, create jobs, and help stabilize electricity prices and volatility.

(b) Discuss the waste management measures appropriate in a computer manufacturing industry (6 marks)

1. Re-evaluate. ...
2. Extend the life of your electronics. ...
3. Buy environmentally friendly electronics. ...
4. Donate used electronics to social programs—and help victims of domestic violence, children safety initiatives, environmental causes, and more. ...
5. Reuse large electronics

ENVIRONMENTAL MANAGEMENT

State five components of sustainable Development (5mks)

- Preservation--- refers to the policy that forbids the exploitation of a resource because it is threatened
- Conservation – involves reduction in the use of the natural resource by efficient improvement or reuse
- Restoration—involves the return of a depleted resource to its original state

Define the following concepts:

i. Ecological Niche-- describes the role and position a species has in its environment how it meets its needs for food and shelter, how it survives and how it reproduces
ii. Silviculture- is a practice of controlling the establishment, growth, composition health and quality of forest to meet diverse needs and values
iii. Integrated waste management it refers to the complimentary use of a variety of practices to safely and effectively handle municipal solid waste
iv. Environmental Impact Assessment--- this is the formal process used to predict the environmental consequences (positive /negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action

West lands provide a number of free ecological and economic services; highlight seven of these services 7mks

- Protecting and improving water quality,
- supporting the fishing industry
- storing flood waters and providing opportunities for recreation and education
- they provide commercial products such as food and energy sources
- They serve as a wildlife habitat
- Some wetlands plant species such as reeds can be harvested or used to produce specialty foods medicines cosmetics and decorative items

State five principles of environmental law 05mks

- Precautionally principal
- Principal of intergenerational equity
- Conservation of Biological diversity and ecological integrity
- Improvement valuation, prizing and incentive mechanism such as “polluter pays” principal
- Public participation in decision making
- Access to information and to justices

Explain five impacts of human activities on the forests 05mks

- Deforestation—cutting down of trees without replacement
- Desertification --
- Industrialization--
- Urbanization--
- Social economic activities--
- Climate change--

Highlight four properties of hazardous waste 04mks

- They are corrosive when aqueous
- Reactive it is normally unstable and readily undergoes violent change without detonating
- Toxic --
- Ignitability—it is an Ignitability compressed gas

Explain six benefits gained by reduction and prevention of pollution 6mks

- It reduces or eliminates waste created at the source, avoiding the generation of waste
- It protects the environment by reducing the risk of toxic releases
- It safes an organizations money that will have been used in waste handling, disposal and treatment costs.
- Improving worker health and safety by improving air quality, decreasing the use of toxic substances thereby decreasing personnel protective equipment requirement.
- Improving community relations, company image and customer loyalty

SECTION B

1. a. Describe in details the classification of environmental resources 10mks

    - Renewable
    - nonrenewable
    - Global personal
    - natural /biological

b. Explain three common methods of sustainable resource management 10mks

- Preservation--- refers to the policy that forbids the exploitation of a resource because it is threatened
- Conservation – involves reduction in the use of the natural resource by efficient improvement or reuse
- Restoration—involves the return of a depleted resource to its original state
- Landfills – waste is put on or in the ground and is covered with earth
- Composting – this is natural biodegradation process that takes organic wastes i.e remains of plants. Garden, and kitchen waste and turns into nutrient rich food for your plants
- Burning--- solid wastes are burned at high temperatures so as to convert them into residue and gaseous products
- Recovery and recycling----resource recovery is the process of recovering of taking useful discarded items for a specific next use.
  Recycling is the process of converting waste products into new products to prevent energy usage and consumption of fresh materials
- Solid waste management by bio technology—this is decomposing organic waste biologically and it may be possible to recover resources by biotechnology

2. A. Highlight five EMCA 1999 regulations on the environment 10mks

Environmental impact assessment. Environmental audit and monitoring. Environmental restoration orders, conservation orders, and easements.

b. Explain five multilateral environmental agreements being implemented in Kenya for environmental management. 10mks

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Convention on Biodiversity and the Cartagena Protocol on Biosafety. Convention on International Trade in Endangered Species of Wild Fauna and Flora.

3. A. Highlight the impacts of urbanization on the environment 10mks

1. The creation of heat island Materials like concrete, asphalt, bricks etc absorb and reflect energy differently than vegetation and soil.Cities remain warm in the night when the countryside has already cooled.

2. Changes in Air Quality Human activities release a wide range of emissions into the environment including carbon dioxide, carbon monoxide, ozone, sulfur oxides, nitrogen oxides, lead, and many other pollutants.

3. Changes in Patterns of Precipitation Cities often receive more rain than the surrounding countryside since dust can provoke the condensation of water vapor into rain droplets.

4. Erosion and other changes in land quality Rapid development can result in very high levels of erosion and sedimentation in river channels

5. Pollution

Pollutants are often dispersed across cities or concentrated in industrial areas or waste sites.

6. Degraded Water Quality

The water quality has degraded with time due to urbanization that ultimately leads to increased sedimentation there by also increasing the pollutant in run-off.

Exam

Explain the following terms

Biosphere.. the area of existence of living matter … the biosphere can be regarded as the area of the Earth's crust occupied by transformers, which convert cosmic radiation into effective terrestrial energy:

Law of the minimum.. if one of the essential plant nutrients is deficient, plant growth will be poor even when all other essential nutrients are abundant.

Resource Curse is the phenomenon of countries with an abundance of natural resources having less economic growth, less democracy, or worse development outcomes than countries with fewer natural resources

Attributes of the Ecosystem concept that make it indispensable to our understanding of the Environment.

producers, consumers, decomposers, abiotic factors, and biotic factors.

Define the term political ecology and explain its utility in environmental management

has done much to explore how and why the poor are so often marginalized ecologically, economically and politically.. Living in poverty restricts the options people have for resource management: Poor people are regularly portrayed as both the 'victims and unwilling agents' of environmental degradation in developing regions.

Outline four differences between Blueprint and learning process approaches

	Blueprint	*Learning process*
Idea originates in	capital city	village
First steps	data collection and plan	awareness and action
Design	static, by experts	evolving, people involved
Supporting organisation	existing, or built top-down	built bottom-up, with lateral spread
Main resources	central funds and technicians	local people and their assets
Staff training and development	classroom, didactic	field-based learning through action
Implementation	rapid, widespread	gradual, local, at people's pace
Management focus	spending budgets, completing projects on time	sustained improvement and performance

Justify the necessity of gender equity in Environmental resource management

limiting or restricting women's access to resources and decision-making opportunities. Thus, addressing gender gaps in ecosystems management is essential to achieve conservation goals, community wellbeing and human rights.

Explain how networked information technologies contribute to the attainment of sustainable development within circular economics.

- ICT provides new technologies, methods and tools for the development of scientific research
- In economic development ICT and particularly the internet provides a basic platform for the growth of digital economy
- ICT enable vastly more efficient uses of energy and material resources through the development of "smart" energy, transportation, building, manufacturing, water, agricultural, and resource management systems.
- Virtualization can eliminate wasteful network equipment, reducing energy and floor space
- IT enables teams of employees to work on projects collectively from diverse locations.

Question 2

Discuss the following in relation to Kenyan Forestry.

a. The ecosystem goods and services provided by forests.

) inorganic substances (carbon, nitrogen, carbon dioxide, water, etc.) involved in natural cycles; (2) organic compounds (proteins, carbohydrates, humic substances, etc.; (3) air, water and substrate environment including the climatic regime and other physical factors; (4) producers, autotrophic (i.e. self-sustaining organisms) green plants that can manufacture food from simple inorganic substances; (5) heterotrophic (i.e. depending on others for nourishment) organisms, mainly bacteria, fungi and animals which live on other organisms or particulate organic matter; (6) micro-consumers, decomposers,

mainly, bacteria, fungi which obtain their energy by breaking down dead tissues or by absorbing dissolved organic matter, extracted from plants or other organisms.

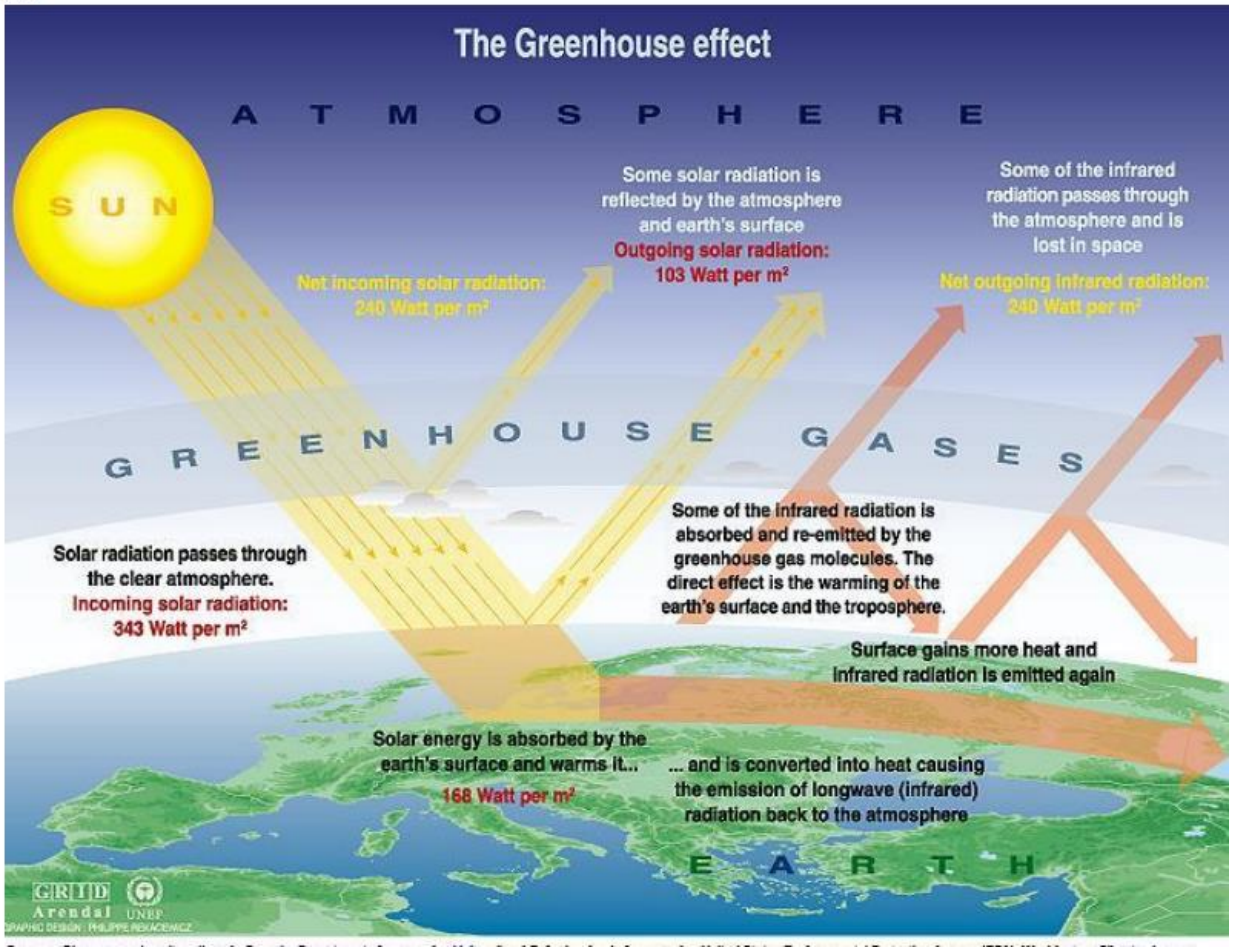
b. The factors responsible for their destruction ,degradation and fragmentation

land conversion for development from growing populations, mining for materials, harvesting lumber for paper products and, of course, agriculture. agriculture, urbanization, deforestation, resource extraction, alteration of the sea-floor due to trawling (fishing), or the release of pollutants.

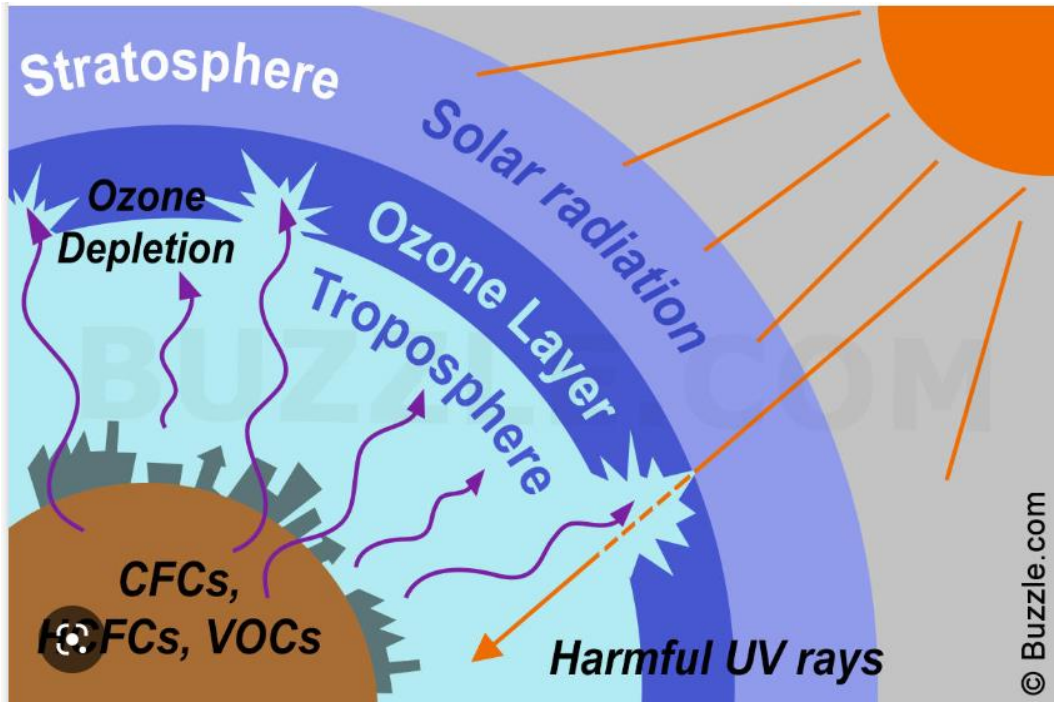
Question 3

Describe the following.

a. **Greenhouse effect..** the way in which heat is trapped close to Earth's surface by "greenhouse gases." These heat-trapping gases can be thought of as a blanket wrapped around Earth



b. **Ozone layer depletion..** is the thinning of the ozone layer present in the upper atmosphere. this happens when the chlorine and bromine atoms in the atmosphere come in contact with ozone and destroy the ozone molecules effects increased amounts of UV radiation to reach the Earth which can lead to more cases of skin cancer, cataracts, and impaired immune



Question 4

a. **Discuss the possible interventions strategies that can contribute to more sustainable social and ecological systems in Kibera Informal settlement Upgrade Project**

In-situ" slum rehabilitation with participation of private developers using land as a resource. ...

Promotion of Affordable Housing for weaker section through credit linked subsidy.

Affordable Housing in Partnership with Public & Private Sectors.

Easy access to safe water in sufficient amounts at an affordable price. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people. Security of tenure that prevents forced evictions

Question 5

Discuss the social economic and environmental implication of the standard gauge railway project in Kenya

Social impacts Similarly, the SGR will significantly influence land use and spur development in the areas around where it will traverse

Environmental Landscape modification by the SGR construction has resulted in **increased soil erosion, land degradation, flooding, sedimentation of water bodies, habitat destruction and impeding wildlife movements**

Explain the following Environmental management Terms

Full cost accounting-- the act of calculating the total value of a company's products.

De-agrarianisation-- as a long-term process of: occupational adjustment, income-earning reorientation, social identification, and spatial relocation of rural dwellers away from strictly peasant modes of livelihood.

Linear Economic Model-- The traditional model where raw materials are collected and transformed into products that consumers use until discarding them as waste, with no concern for their ecological footprint and consequences.

Explain how Green and brown environmental agendas influence sustainable development .. . Green, to completely neutralize the amount of greenhouse gases that we emit into the atmosphere.
brown agenda refers to issues of safe water provision, sanitation, and drainage; inadequate solid and hazardous waste management
Impacts of Global warming..

- A slight rise in temperature even by 1°C, can have adverse effect on world food production
- The biological productivity of the ocean will fall due to warming of the surface layer.
- the rise in sea levels by as much as 15 cm in the next 100 years due to partial melting of polar ice caps.
- intense drought, storms, heat waves, rising sea levels, melting glaciers and warming oceans

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