ENVIRONMENTAL STUDIES

SUBJECT CODE: 19UGCES I BBA

Two mark questions and answers:

1) What do you Mean by resources?

There are **two** types of natural **resources**: renewable and non-renewable. ... their regeneration involves the passage of many years, such as **minerals** and fossil fuels (oil, natural gas ... Significantly expand the global network of protected **areas**.

2) What is energy pyramid?

An **energy pyramid** (sometimes called a trophic **pyramid** or an **ecological pyramid**) is a graphical representation, showing the flow of **energy** at each trophic level in an ecosystem. ... The second trophic level consists of primary consumers. These are the herbivores that feed solely on primary producers

3) How is PAN is formed?

a. **PAN** is **formed** by oxidation of non-methane volatile organic compounds (NMVOCs) in the presence of NOx. NMVOCs and NOx have both natural and anthropogenic sources. Fossil fuel combustion is the principal NOx source, with additional contributions from biomass burning, light- ning and soils

4) What are the objectives of natural mission ?

Encourage responsible **natural** resource use and a lifelong love of the outdoors. Build an environmentally conscious and literate citizenry.

5) Define arsenicosis?

Arsenic poisoning, or **arsenicosis**, happens when a person takes in dangerous levels of **arsenic**. **Arsenic** is a natural semi-metallic chemical that is found all over the world in groundwater.

6)What is population growth rate for?

Population growth is the increase **in** the number **of** individuals **in** a population. Global human ... The growth **of** a population can often be modelled

7)what are fuels?

Meaning of fuel is a substance that is burned to provide nuclear energy, heat or power. Materials like coal, wood, oil, or gas can provide heat when burned. Methanol, Gasoline, Diesel, Propane, Natural gas, Hydrogen are types of fuel.

6) What are the different types of desert?

Trade wind deserts
Midlatitude deserts
Rain shadow deserts

7) Define endemism?

Endemism **is the ecological state of a species being unique to a** defined **geographic location, such as an island, nation, country or other** defined **zone, or habitat type; organisms that are indigenous to a place are not** endemic **to it if they are also found elsewhere.**

8) Define osteoporosis?

Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.

9) Define sustainable development?

Sustainable development **is** development **that meets the needs of the present without compromising the ability of future generations to meet their own needs.**

10) What is sources of segregation?

These causes of racial segregation form a vicious circle, via the ways segregation in turn causes concentrated urban poverty among African-Americans and Hispanics, which reinforces racial prejudice, further fueling white flight from neighborhoods inhabited by or proximate to blacks and Hispanics.

11) How hurricanes are formed?

Hurricanes form **over the warm ocean water of the tropics. When warm moist air over the water rises, it is replaced by cooler air. The cooler air will then warm and start to rise. This cycle causes huge storm clouds to** form**.**

12) What is CITES?

CITES **(the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.**

13) What is water conservation?

Water conservation includes all the policies, strategies and activities to sustainably manage the natural resource of fresh water, to protect the hydrosphere, and to meet the current and future human demand. Population, household size and growth and affluence all affect how much water is used.

14) Explain the different types of ecosystem diversity?

ecological diversity on a global scale would be the variation in ecosystems, such as deserts**,** forests**, grasslands,** wetlands **and oceans.**

15) What is ecological sanitation?

Ecological sanitation, commonly abbreviated as ecosan, is an approach to sanitation provision which aims to safely reuse excreta in agriculture. It desires to "close the loop" mainly for the nutrients and organic matter between sanitation and agriculture.

16) What are the chemicals in fertilizers?

Most chemical fertilizers are made by the reaction of an acid with an alkali. Packaged fertilizers also often contain three macronutrients: nitrogen, phosphorous and potassium. Ammonium nitrate, a good source of nitrogen and ammonium for plants, is also an important ingredient in the production of high quality, effective fertilizers.

FIVE MARK QUESTION AND ANSWERS:

1) How sanitary affects our food resources?..

However, only you and your company can determine how seriously you are going to take it.

Most people have been part of a sanitation program from as early as primary school, but may not have recognized it. As children we were

directed to clean our rooms, put our clothes away, wash our dishes, and do other dreaded chores. Whether a formal chore chart or an informal household rule, your family likely followed some sort of cleaning schedule: dishes were washed daily; laundry was washed, folded, and put away weekly; and cleaning your dungeon room may have ranged from weekly to yearly!

These tasks probably were not documented, frequencies assigned, or completion dates recorded, but you were learning your role in your home's master cleaning schedule (MCS).

2) **What are the causes of land degradation?**

Land degradation is a global problem largely related to agricultural use, deforestation and Climate Change. Causes include:

- Land clearance, such as clear cutting and deforestation
- Agricultural depletion of soil nutrients through poor farming practices
- Livestock including overgrazing and over drafting
- Inappropriate irrigation[8] and over drafting
- Urban sprawl and commercial development
- Vehicle off-roading
- Quarrying of stone, sand, ore and minerals
- Increase in field size due to economies of scale, reducing shelter for wildlife, as hedgerows and copses disappear
- Exposure of naked soil after harvesting by heavy equipment
- Monoculture, destabilizing the local ecosystem
- Dumping of non-biodegradable trash, such as plastics
- Invasive Species
- Climate Change
- Loss of soil carbon

3) What are the different types of land degradation?

In addition to the usual types of land degradation that have been known for centuries (water, wind and mechanical erosion, physical, chemical and biological degradation), four other types have emerged in the last 50 years:[7]

- pollution, often chemical, due to agricultural, industrial, mining or commercial activities;
- loss of arable land due to urban construction, road building, land conversion, agricultural expansion, etc.;
- artificial radioactivity, sometimes accidental;
- land-use constraints associated with armed conflicts.

Overall, more than 36 types of land degradation can be assessed. All are induced or aggravated by human activities, e.g. Soil erosion, Soil contamination, Soil acidification, sheet erosion, silting, aridification, salinization, urbanization, etc.

4) How do you measure the land degradation?

There are four main ways of looking at land degradation and its impact on the environment around it:

1. A temporary or permanent decline in the productive capacity of the land. This can be seen through a loss of biomass, a loss of actual productivity or in potential productivity, or a loss or change in vegetative cover and soil nutrients.
2. Action in the land's capacity to provide resources for human livelihoods. This can be measured from a base line of past land use.
3. Loss of biodiversity: A loss of range of species or ecosystem complexity as a decline in the environmental quality.
4. Shifting ecological risk: increased vulnerability of the environment or people to destruction or crisis. This is measured through a base line in the form of pre-existing risk of crisis or destruction.

A problem with defining land degradation is that what one group of people might view as degradation, others might view as a benefit or opportunity. For example, planting crops at a location with heavy rainfall and steep slopes would create scientific and environmental concern regarding the risk of soil erosion by water, yet farmers could view the location as a favourable one for high crop yields.[6]

5) Explain the formation of photochemical smog?

Nitrous oxide and nitrogen dioxide dissociate in sunlight and combine with trace hydrocarbons to ultimately produce a large number of pollutants. The complex process proceeds in stages:

- Sunlight causes the photodissociation of nitrogen and oxygen to yield ozone and oxygen atoms.
- Oxygen atoms react with water to form hydroxyl radicals (OH).
- Hydroxyl radicals oxidize hydrocarbons to form hydrocarbon radicals.
- Hydrocarbons oxidize to form a class of chemicals known as aldehydes.
- Aldehydes oxidize to form aldehyde peroxides and aldehyde peroxyacids, which are the pollutants that create most of the health problems.

6) Explain the classification of wastelands ?

1. Cultural Wasteland:

Those waste land which can be developed for agricultural or forestation purpose after some treatment. They are rendering unused because of alkalinity of soil, erosion of soil, water logging, etc.

2. Non Culturable land:

That wasteland which cannot be developed for agricultural, forestation or any other productive purposes by any means. Example: Desert land, Rocky land, Glacier land, Snow covered land.

7) Significance of wastelands?

Formation of wastelands lead to the deterioration of the ecological balance by adversely affecting the various components of the ecosystem directly or indirectly dependent on that particular land.

8) What do you mean by hydroelectric energy resources in india?

India is the 7th largest producer of hydroelectric power in the world. As of 30 April 2017, India's installed utility-scale hydroelectric capacity was 44,594 MW, or 13.5% of its total utility power generation capacity.[1]

Additional smaller hydroelectric power units with a total capacity of 4,380 MW (1.3% of its total utility power generation capacity) have been installed.[2][3]

India's hydroelectric power potential is estimated at 148,700 MW at 60% load factor.[4] In the fiscal year 2016–17, the total hydroelectric power generated in India was 122.31 TWh (excluding small hydro) with an average capacity factor of 33%.

The hydro-electric power plants at Darjeeling and Shivanasamudram were established in 1898 and 1902, respectively.

They were among the first in Asia and India has been a dominant player in global hydroelectric power development.[5] India also imports surplus hydroelectric power from Bhutan.

Small hydropower, defined to be generated at facilities with nameplate capacities up to 25 MW, comes under the ambit of the Ministry of New and Renewable energy (MNRE);

whilst large hydro, defined as above 25 MW, comes under the ambit of Ministry of Power.[6][7]

9) **Different types of cyclone ?**

Typhoons – China Sea.

Tropical Cyclones- Indian Ocean.

Hurricanes-Caribbean Sea.

Tornadoes-USA.

Wily Willies- Northern Australia.

Baguio- Philippines.

Taifu- Japan.

Cyclone Amphan:

10) **What are the importance of soil?**

Climate

Parent material

Time

Living things

11) **What do you mean by deforestation?**

Forests can be found from the tropics to high-latitude areas. They are home to 80% of terrestrial biodiversity, containing a wide array of trees, plants, animals and microbes, according to the World Bank, an international financial institution. Some places are especially diverse — the tropical forests of New Guinea, for example, contain more than 6% of the world's species of plants and animals.

a. Forests provide more than a home for a diverse collection of living things; they are also an important resource for many around the world. In countries like Uganda, people rely on trees for firewood, timber and charcoal. Over the past 25 years, Uganda has lost 63% of its forest cover, Reuters reported. Families send children — primarily girls — to collect firewood, and kids have to trek farther

and farther to get to the trees. Collecting enough wood often takes all day, so the children miss school.

b. According to a 2018 FAO report, three-quarters of the Earth's freshwater comes from forested watersheds, and the loss of trees can affect water quality. The UN's 2018 State of the World's Forests report found that over half the global population relies on forested watersheds for their drinking water as well as water used for agriculture and industry.

12) what are the uses of fertilizers?

Fertilizers are used daily by farmers and families to help crops and gardens grow. Whether for a small garden of flowers and plants, or a large farm with thousands of acres of crops, a wide range of fertilizers have been developed to help different crops grow in different soil and weather conditions.

Chemical ingredients help create fertilizers that promote plant growth and are cost effective, too. Commercial and consumer fertilizers are strictly regulated by both individual states and the federal government to ensure that they are safe for the people who use them, people nearby, and the surrounding environment.

13) Types of Fertilizers

There are six different types of fertilizers that are mentioned below:

Inorganic Fertilizers

Inorganic fertilizers are chemical fertilizers that contain nutrient elements for the growth of crops made by chemical means. The inorganic fertilizers are of the following types:

Nitrogen Fertilizers

Nitrogen fertilizers contain nitrogen necessary for the development of crops. Nitrogen is the main constituent of chlorophyll that maintains a balance in the

process of photosynthesis. It is also a part of amino acids in plants and constitutes protein. Nitrogen fertilizers improve the production and quality of agricultural products.

Phosphorus Fertilizer

The main nutrient in a phosphorus fertilizer is phosphorus. The efficiency of fertilizer depends upon effective phosphorus content, methods of fertilizing, properties of soil and crop strains. Phosphorus found in the protoplasm of the cell plays an important role in cell growth and proliferation. The phosphorus fertilizer is beneficial for the growth of roots of the plants.

Organic Fertilizers

Organic fertilizers are natural fertilizers obtained from plants and animals. It enriches the soil with carbonic compounds essential for plant growth. Organic fertilizers increase the organic matter content of the soil, promotes the reproduction of microorganisms, and changes the physical and chemical properties of the soil. It is considered to be one of the main nutrients for green food.

SECTION-C

1.Write a short note on Global Warming.

Global Warming is a term almost everyone is familiar with. So, Global warming refers to the gradual rise in the overall temperature of the atmosphere of the Earth.There are various activities taking place which have been increasing the temperature gradually. This is extremely harmful to the earth as well as humans. It is quite challenging to control global warming.

Causes :

- Global warming has become a grave problem which needs undivided attention. It is not happening because of a single cause but several causes

- These causes are both natural as well as manmade. The natural causes include the release of greenhouses gases which are not able to escape from earth, causing the temperature to increase.

- Further, volcanic eruptions are also responsible for global warming. That is to say, these eruptions release tons of carbon dioxide which contributes to global warming. Similarly, methane is also one big issue responsible for global warming.

After that, the excessive use of automobiles and fossil fuels results in increased levels of carbon dioxide. One of the most common issues that are taking place rapidly is deforestation.

Solutions:

- Global warming can be stopped when combined efforts are put in. For that, individuals and governments, both have to take steps towards achieving it. We must begin with the reduction of greenhouse gas.

- Furthermore, they need to monitor the consumption of gasoline. Switch to a hybrid car and reduce the release of carbon dioxide. Moreover, citizens can choose public transport or carpool together. Subsequently, recycling must also be encouraged.

- On the government's part, they must regulate industrial waste and ban them from emitting harmful gases in the air. Deforestation must be stopped immediately and planting of trees must be encouraged.

- In short, all of us must realize the fact that our earth is not well. It needs to treatment and we can help it heal. The present generation must take up the responsibility of stopping global warming in order to prevent the suffering of future generations

2. Write a short note on Sanitary land fill method.

- A sanitary land fill is a waste disposal location where layers of compressed garbage is covered with layers of earth. When the facility reaches the end of its life and is full, a cap is used to close the top of site. Sanitary land fills are among the most popular methods for disposing of waste, although they have some serious disadvantages.

- The function of a landfill is to bury the trash in such a method that it will certainly be isolated from groundwater, will be reliably kept dry and will not come in touch with air. Under these conditions, garbage will certainly not break down much.

- The technique was introduced in England in 1912 (where it is described as controlled tipping) and includes natural anaerobic digestion produced by methane producing microorganisms. Normally the refuse is emplaced in shallow layers, compressed, and covered within 24 hours with earth or other chemically inert product, over a landfill lining membrane to form an effective seal.

- A tracked or special steel wheeled mobile mechanical device such as a land fill compactor is used to grade, compact, and cover the refuse.

- The sanitary landfill waste disposal method often is employed to recover otherwise pointless land, i.e., to fill declivities to levels hassle-free for structure or park and other public functions.

- Operating procedures at a sanitary garbage dump are decided out by considering lots of aspects, which vary from site to site.

- Since a land fill is constructed and run over number of years, it is necessary that workers continually re-read, and familiarise themselves with the strategy. This is to assure conformance with the strategy over the long term. Operating procedures must be kept in mind so that a precise record is preserved. Modifications in operating treatments commonly need regulatory agency approval, and careful planing is necessary to make a smooth transition to a revised operating plan.

Today, the sanitary landfill is the major approach of disposing waste materials in North America and other industrialized countries, although substantial efforts are being made to discover alternative methods, such as recycling, incineration, and composting

3. Explain about the modern agriculture and biodiversity.

Humanity has been farming for at least 10,000 years. For most of that time, agriculture has been small-scale, labour-intensive and relatively low-tech. The last half-century, however, has witnessed a rapid revolution in the technology of agricultural production, particularly in the developed world, that has allowed the widespread adoption of industrial-scale farming techniques.

The interdependence of nature:

By its very nature, modern agriculture to a large extent involves managing land in ways that conflict with the conservation of biodiversity and the healthy functioning of ecosystems. For example, industrial agriculture often requires fields to be levelled and hedgerows removed. Similarly, single crops are planted over large areas, and 'rest periods' – which allow natural vegetation to re-grow – are eliminated.

If these plants and animals – many whose role has yet to be identified – are lost, the environmental services they provide may well disappear with them. When a single species is lost, its associated environmental service may well be replaced by other species. But with serious losses, the optimal providers of services will almost certainly be affected.

The impact of industrial agriculture on biodiversity:

Knowledge of the relationship between agriculture and biodiversity has greatly improved with data from recent studies, including those by the Consultative Group on International Agricultural Research and the UN Food and Agriculture Organisation (FAO).

Satellite data, for example, shows us that 28 per cent of the Earth's surface is used for agriculture and livestock rearing. We also know that 41 per cent of the world's farmland is managed fairly intensively, using heavy machinery and agricultural chemicals.

But such trends cannot continue unmodified. Modern agricultural practices, many developed through the Green Revolution, are seriously reducing the productivity of agricultural land in both developed and developing countries.

More water for farms, less for nature:

Another damaging factor has been irrigation, on which much agriculture relies. The heavy use of water was an important contributor to the productivity gains of the Green Revolution.

Irrigation has left soils in many countries waterlogged and containing high levels of salt. It has also depleted reservoirs and groundwater sources. In the past century alone, over 50 per cent of the world's wetlands have been lost because of

the demands of agriculture. And of the more than 3500 species currently under threat worldwide, 25 per cent are fish and amphibians.

In the great tropical rivers of Asia, Africa and Latin America, for example, large numbers of animal and plant species have adapted to regular flooding patterns.

The potential conflict between the use of water for human purposes (particularly agriculture), and the need for water to sustain biodiversity, are well illustrated by the Pangani River of northern Tanzania.

Farming with fewer chemicals:

Another way to reduce the impact of agriculture on biodiversity is to develop farming techniques that use fewer chemicals. Modern agriculture relies on a high level of chemical input. These include fossil fuels to drive machinery, as well as chemical fertilisers, pesticides and herbicides – all of which affect both soil quality and biodiversity..

Non-toxic alternative pesticides do exist. These include 'bio-pesticides', whose active ingredients are living organisms such as a bacterium, virus, or plant extract.

But their adoption has been hampered by some of the existing regulations. Some registration procedures, for example, only recognise broad-spectrum chemicals.

Reforming national seed policies :

Another way of developing forms of agriculture that are more biodiversity-friendly is by reforming national seed policies. The world's range of food crops is already being reduced as a result of industrial-scale agriculture, as is the range of animal varieties.

Even in countries that do maintain a strong tradition of small-scale agriculture, however, plant and animal diversity on farms can still be threatened. The danger lies in the national seed policies that govern how farmers select, keep, sell or exchange seeds. In the past, farmers have been able to maintain a diversity of seed stock by freely exchanging seeds with each other.

4. What are Natural Resources?Explain its types.

Natural resources refer to the things that exist freely in nature for human use and don't necessarily need the action of mankind for their generation or production.

Some examples of natural resources are: air which provides wind energy, Coal which act as an input for electricity, forests which provide paper, wood and various medicines, Water which is used for drinking and production of hydroelectric energy, sunlight that is used for drying clothes, photosynthesis and solar energy.

Types :

1.Renewable and Non-renewable Natural Resource:

a. Renewable natural resources

Renewable resources are the ones that are consistently available regardless of their use. They can be fairly recovered or replaced after utilization. Examples include vegetation, water, and air. Animals can also be categorized as renewable resources because they can be reared and bred to reproduce offspring to substitute the older animals.

b. Non-renewable natural resources

Non-renewable resources are the ones that cannot simply be substituted or recovered once they have been utilized or destroyed. Examples of such natural resources include fossil fuels and minerals. Minerals are categorized as non-

renewable because, even though they take shape naturally through the rock cycle, their formation periods take thousands of years.

Some animals mostly the endangered species are similarly regarded as non-renewable because they are at the verge of extinction.

2. Biotic and Abiotic Natural Resources:

a. Biotic natural resources

The Biotic natural resources are the ones that come from the ecosphere .These include resources such as animals, forests, and other materials obtainable from them. Fossil fuels such as petroleum, oil, and coal are also included in this grouping because they are generated from decayed organic matter.

b. Abiotic natural resources

The abiotic natural resources are the ones that come from non-organic and non-living materials. Examples of abiotic natural resources are water, land, air and heavy metals like iron, copper, silver, gold, and so on.

3.Stock Natural Resources

Stock natural resources are those that are present in the environment but t the necessary expertise or technology to have them exploited. Hydrogen is an example of a stock natural resource.

Threats to Natural Resources:

1. **Overpopulation Which Brings About Over-exploitation**

As the human population keeps on enlarging, there is a lot of pressure on the utilization of almost all natural resources. This often causes over-exploitation of the natural resources. To worsen matters, exhaustible natural resources such as arable land, coral reefs, fresh water, fossil fuels, and wilderness forests drop sharply due to over-exploitation to sustain the ever increasing population. This

creates competitive demands on the vital life-sustaining resources and contributes to an incredible decline in the quality of life.

Intensive Agricultural and Farming Practices

Intensive agricultural practices have claimed much space of the natural resources because farmers resort to converting forests and grasslands to croplands. In the modern world, the pressure to convert lands into resource areas for producing priced foods, crops, and livestock rearing has increasingly led to the depreciation of natural resources especially forests, wild life and fertile lands.

3.Climate Change and Global Warming

The severe changes in climate patterns as a result of human activities and overpopulation that generate greenhouse gases and carbon footprint in the atmosphere threatens biodiversity as well as other numerous natural resources.

4.Environmental Pollution

The majority of natural resources have been destroyed and a large portion is under immense threat due to the toxic substances and chemicals emitted from industries, homemade utilities, and agricultural products among other processed materials.

5.Land Use and Development

The conversion of lands into urban settings, housing development projects, office spaces, shopping malls, industrial sites, parking areas, road networks, and so on takes away the naturally occurring land that provided habitat for wildlife and other living organisms..

5. What are the Major Effects of Thermal Pollution?

1. **Thermal shock resulting in rise in temperature of water bodies** – When industries and factories dispose the water, used as coolant, back into water bodies the temperature suddenly raises to an abnormal level.

2. **Depleted level of oxygen in natural water** – When warm water discharged by industries enters the natural water bodies, they get heated up. The warm water causes an unusual growth of plants and expansion of algae. The algae expansion in water reduces the level of oxygen in water.

3. **Contamination of water** – Thermal pollution also results in contamination of water because various chemicals and other wastes get mixed up with the water that is disposed off back to rivers, ponds, lakes, etc., by various factories. If this contamination of water keeps on increasing, humans can suffer from shortage of water.

4. **Reduced solubility of oxygen** – Reduced solubility of oxygen in water bodies is another disappointing effect of thermal pollution. This less solubility of oxygen in water mainly affects the metabolism of water animal.

5. **Adverse effect on water plants** – Change in temperature levels is extremely harmful for the aquatic plants. These plants cannot cope up with the sudden alteration in water temperature. Hence, more and more aquatic plants are depleting each day because of thermal pollution

6. **Adverse effects on water animals** – The whole marine life gets disturbed because of thermal pollution. The contaminated water makes the natural water poisonous and has an adverse effect on animals living in it. Also, the reduced level of oxygen makes it difficult for water animals to survive.

7. **Effect on population of water animals** – When the temperature in natural water bodies gets disturbed because of thermal pollution, the cycle of animal population gets disturbed too. For example, sometimes the fish start laying eggs too soon and sometime they do it too late. The whole productivity of river gets disturbed too.

8. **Disturbance in biological activities of water animals** – Thermal pollution leads to a disturbance in quality and temperature of water in various

water bodies. This altered quality and temperature directly affect all the biological activities of animals, thus disturbing the cycle of nature.

9. **Unfavorable Effect on Water Biodiversity** – Thermal pollution largely affects the water bio diversity. The rise in temperature of water results in increased metabolic activity of some water animals. Hence, they start consuming more food in short time. This also leads to shortage of certain water resources. Some animals which are unable to stand the raised temperature start moving to other regions. Therefore, the whole natural system of water bio diversity gets disturbed.

10. **Unexpected Migration of Water Animals** – When water animals find it difficult to survive in the changed water because of thermal pollution, they start for an unexpected migration, making way for a disturbed ecosystem.

6.Write a note on population explosion.

The term population explosion refers to the phenomenon of a rapid increase in population which tends to outstrip the growth of national income and retards the progress in per capita income.

The phenomenon of population explosion is associated with a high birth rate which for outstrips the death rate.

Causes of Population Increase in India:

Rapidly increasing population of India is a result of prevailing high birth rate and a large decline in the death rate in India. Thus to understand the causes of rapid population increase in India we have to analyse the factors which account for high birth rate and the factors that have contributed to a large decline in death rate.

High birth rate continues to prevail because of the following reasons:

Early Marriage:
Tropical Climate
Grinding Poverty
The Age and Sex Composition of the Population
Absence of Preventive Checks
Declining Death Rate

Effects of Population Growth in India:

In the industrially advanced countries of Western Europe, economic development was to a great degree asserted by the rapid growth of population. The increase in number of people provided the economy with additional labour force on one side and expanding market on the other.

1. Population Growth and National Income:

The rising population lowers national and per capita income in the country. Whatever additional income is produced during the period of five year plans is eaten up by the increasing population and so the real per capita income does not rise or rise very insignificantly.

2. Population and Food Supply:

The supply of food needed has direct relationship with the mouths to be fed. Thus, in India with the increase in population, the demand for food grains has also gone up.

3. Population and Capital Formation:

Capital formation is an important factor for economic development. With given rate of population growth and capital output-ratio, the rate of economic development is directly related to the rate of capital formation.

4. Burden of Unproductive Consumers:

Unproductive consumers are those who do not work either because they are incapable of working or because they do not get work i.e. those, who are unemployed. Productive consumers are said to be those consumers who contribute to the national income.

5. Problem of Unemployment and Under-Employment:

India has been facing the grave problem of unemployment and under-employment.

6. Population Growth Lowers Labour Efficiency:

Since an increase in population reduces per capita income and lowers the standard of living of the masses, it makes the people less efficient. People cannot be physically fit and mentally alert if they are not even provided with basic necessities of life.

7. Growth of Population Hampers Rural Development:

The rural areas become the worst suffers by the rapid growth of population. It reduced per capita availability of land. It results in sub-division and fragmentation of holdings, decline in productivity and disguised unemployment.

7Write a short note on women and child welfare.

Women and Child welfare :

Women and children are very important identities of human society.The adult women are the creators of next generation, and children are the hopes of future. In this regard, Governments also devise and implement various welfare measures for them.Some of the women and child welfare measures are listed below.

1)Sarwa Siksha Abhiyan

2)Balika Samridhi Yojana
3)Indira Mahila Yojana
4)Programme of Development of women and Children in Rural areas
5)Mahila Samridhi Yojana
6)Integrated Child Development Services
7)Employement and Income Generating Training-cum-Production centers
8)Rashtriya Mahila Kosh
9)Short Stay Home for Women and Girls

Problems affecting Women and Child Welfare:

1)Under nourishment
2)Malnutrition
3)Limited education
4)Lower socio-economic status

(i) Under nourishment

Under nourishment means the lack of sufficient calories in food. The lack of energy and nutrients make them prone to infectious diseases. In causes weakness and sickness also.

(ii) Malnutrition

Malnutrition means lack of specific ingredients such as vitamins, proteins, minerals, etc. in the food. Pregnant women, nourishing mothers and children are more susceptible to malnutrition. It causes the following ill effects in women and children.

According to demographic data and estimates, the projections in the year 2002 for India are as follows;

Infant mortality rate = 68.
Life expectancy at birth(total life) = 633.

(iii) Limited education

The number of school going children is still far from satisfactory. Less than 50% reach to primary school. Also a substantial number of them than drop out at elementary level. The drop-out rate of girls is much higher than those of the boys.

Literacy in the year 2001 at national level=65.38%
a. The literacy rate in males = 75.85%
b. the literacy rate in female =54.16%

(iv) Lower socio-economic status

The socio-economic status of women is generally lower than man in under-developed countries. This can be understood well by the fact that the number of school going boys at all levels of education is generally more than the number of girls.

The lower socio-economic status of women and children can also be understood by the following status
a. Women labour force in the year 2001 = 90 million
b. Child labour force in the year 2001 = 11.28 million

8.Give an account on acid rain formation.

Acid rain refers to rain or other forms of precipitation with a low pH level.

Acid rain is rain with an unusually low pH level, meaning it is extremely acidic. Acid rain is caused by the omission of harmful particles into the atmosphere, including sulfur dioxide (SO_2) and nitrogen oxide (NO_2). Acid rain can have harmful effects on plants, marine animals, humans, infrastructure and more.

Although these gasses can be released naturally through lightning strikes and volcanic activities, they are mostly a product of human activities. For example, SO_2 is created as a result of activities that burn **fossil fuels**, and NO_2 is a byproduct of **fertilizers**.

Formation:

Acid rain is a product of the chemical reaction of sulfur dioxide and nitrogen oxide that is released with water, oxygen, and other chemicals into the atmosphere. Sulfur dioxide and nitrogen oxide readily dissolve in water and can be carried several miles by the wind.

After traveling for a long distance, the two compounds become part of rain, sleet, snow or fog. Power plants emit sulfur dioxide and nitrogen oxide when fossil fuels such as coal are burned to produce electricity.

Effects of Acid Rain:

Animals

In aquatic settings such as the ocean, lakes, streams, and marshes, the ecological effect of acid rain is evident due to the danger it presents to fish and wildlife. As it flows through the soil, acidic rainwater can leach aluminum from clay soil particles and flow into streams and lakes. The more acid that is introduced into the ecosystem, the more aluminum is released. Although some plants and animals can endure acidic waters and direct measures of aluminum, others are acid-sensitive and will die if pH levels are low.

Plants

Dead or dying trees are common in areas affected by acid rain. Acid rain leaches aluminum from the soil and the aluminum may be detrimental to plants and animals. The rain also eliminates minerals and nutrients from the soil that trees need to grow.

Nature depends on balance, and although some rain is naturally acidic, with a pH level of about 5.0, human activities have thrown this balance off. Ordinary precipitation reacts with basic chemicals or non-acidic materials which are found in air, rocks, soils, streams, and lakes. These reactions usually neutralize natural acids.

9.What Is Solid Waste Management?

Solid waste management is defined as the discipline associated with control of generation, storage, collection, transport or transfer, processing and disposal of solid waste materials in a way that best addresses the range of public health, conservation, economic, aesthetic, engineering, and other environmental considerations.

Solid waste management practices can differ for residential and industrial producers, for urban and rural areas, and for developed and developing nations. The administration of non-hazardous waste in metropolitan areas is the job of local government authorities.

Objectives of Waste Management**:**

The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and the environment to support economic development and superior quality of life. This is to be done in the most efficient manner possible, to keep costs low and prevent waste buildup.

Functional Elements :

1. **Waste generation**: This encompasses any activities involved in identifying materials that are no longer usable and are either gathered for systematic disposal or thrown away.
2. **Onsite handling, storage, and processing**: This relates to activities at the point of waste generation, which facilitate easier collection. For example, waste bins are placed at sites that generate sufficient waste.
3. **Waste collection:** A crucial phase of waste management, this includes activities such as placing waste collection bins, collecting waste from those bins, and accumulating trash in the location where the collection vehicles are emptied.
4. **Waste transfer and transport**: These are the activities involved in moving waste from the local waste collection locations to the regional waste disposal site in large waste transport vehicles.
5. **Waste processing and recovery**: This refers to the facilities, equipment, and techniques employed to recover reusable or recyclable materials from the waste stream and to improve the effectiveness of other functional elements of waste management.
6. **Disposal**: The final stage of waste management. It involves the activities aimed at the systematic disposal of waste materials in locations such as landfills or waste-to-energy facilities.

Integrated Solid Waste Management (ISWM) :

As the field of solid waste management advances, solutions are being looked at more systematically and holistically. ISWM, for example, is an increasingly important term in the field of waste management. It refers to the selection and use of appropriate management programs, technologies, and techniques to achieve particular waste management goals and objectives.

10. Write a short note on ecosystem.

- An **ecosystem** consists of a community of organisms together with their physical environment.
- Ecosystems can be of different sizes and can be marine, aquatic, or terrestrial. Broad categories of terrestrial ecosystems are called **biomes**.
- In ecosystems, both matter and energy are **conserved**. Energy flows through the system—usually from light to heat—while matter is recycled.
- Ecosystems with higher biodiversity tend to be more stable with greater **resistance** and **resilience** in the face of **disturbances**, disruptive events.

As a reminder, a **community** consists of all the populations of all the species that live together in a particular area. The concepts of ecosystem and community are closely related—the difference is that an ecosystem includes the physical environment, while a community does not.

In other words, a community is the **biotic**, or living, component of an ecosystem.Ecosystems can be small, such as the tide pools found near the rocky shores of many oceans, or very large, boundaries in a way that makes sense for their questions of interest.

Some ecosystems are marine, others freshwater, and others yet terrestrial—land based. Ocean ecosystems are most common on Earth, as oceans and the living organisms they contain cover 75% of the Earth's surface. Freshwater ecosystems are the rarest, covering only 1.8% of the Earth's surface. Terrestrial, land, ecosystems cover the remainder of Earth.

Energy and matter in ecosystems:

Ecosystem ecologists are often most interested in tracing the movement of energy and matter through ecosystems.

We'll take a closer look at the movement of energy and matter when we consider **food webs**, networks of organisms that feed on one another, and **biogeochemical cycles,** the pathways taken by chemical elements as they move through the biosphere.

- Matter is recycled; the same atoms are reused over and over.
- Energy flows through the ecosystem, usually entering as light and exiting as heat.

Energy flow is unidirectional, or one-way.

Energy, unlike matter, cannot be recycled in ecosystems. Instead, energy flow through an ecosystem is a one-way street—generally, from light to heat.

Energy usually enters ecosystems as sunlight and is captured in chemical form by photosynthesizers like plants and algae. The energy is then passed through the ecosystem, changing forms as organisms metabolize, produce waste, eat one another, and eventually, die and decompose.

Stability and dynamics of ecosystems

Ecosystems are dynamic systems, and a static ecosystem would be a dead ecosystem—just as a static cell would be a dead cell. As we discussed above, energy is constantly flowing through an ecosystem and chemical nutrients are continually being recycled. At higher levels of organization, organisms are dying and being born, populations are fluctuating in their numbers, and climate patterns are varying seasonally and in less predictable ways.

Equilibrium and disturbance

Equilibrium is the steady state of an ecosystem, in which its composition and identity remain generally constant despite fluctuations in physical conditions and the makeup of the biotic community. Ecosystems may be knocked out of equilibrium by *disturbances*, disruptive events that affect their composition.

10.Explain briefly about the pollution.

Pollution, also called **environmental pollution**, the addition of any substance or any form of energy to the environment at a rate faster than it can be dispersed, diluted, decomposed, recycled, or stored in some harmless form. The major kinds of pollution, usually classified by environment, are air pollution, water pollution, and land pollution. Modern society is also concerned about specific types of pollutants, such as noise pollution, light pollution, and plastic pollution. Pollution of all kinds can have negative effects on the environment and wildlife and often impacts human health and well-being.

Pollution control:

The presence of environmental pollution raises the issue of pollution control. Great efforts are made to limit the release of harmful substances into the environment through air pollution control, wastewater treatment, solid-waste management, hazardous-waste management, and recycling. Unfortunately, attempts at pollution control are often surpassed by the scale of the problem, especially in less-developed countries.

Land pollution

Land can become polluted by household garbage and by industrial waste. In 2014, Americans produced about 258 million tons of solid waste, according to the U.S. Environmental Protection Agency.

Commercial or industrial waste is a significant portion of solid waste. According to the University of Utah, industries use 4 million pounds of materials in order to provide the average American family with needed products for one year.

Water pollution

Water pollution happens when chemicals or dangerous foreign substances are introduced to water, including chemicals, sewage, pesticides and fertilizers from agricultural runoff, or metals like lead or mercury.

According to the Environmental Protection Agency (EPA), 44% of assessed stream miles, 64% of lakes and 30% of bay and estuarine areas are not clean enough for fishing and swimming. The EPA also states that the United State's most common contaminants are bacteria, mercury, phosphorus and nitrogen.

Warming water can also be harmful. The artificial warming of water is called thermal pollution. It can happen when a factory or power plant that is using water to cool its operations ends up discharging hot water.

Nutrient pollution, also called eutrophication, is another type of water pollution. It is when nutrients, such as nitrogen, are added into bodies of water. The nutrient works like fertilizer and makes algae grow at excessive rates, according to NOAA. The algae blocks light from other plants. The plants die and their decomposition leads to less oxygen in the water. Less oxygen in the water kills aquatic animals.

Air pollution

The air we breathe has a very exact chemical composition; 99% of it is made up of nitrogen, oxygen, water vapor and inert gases. Air pollution occurs when things that aren't normally there are added to the air. A common type of air pollution happens when people release particles into the air from burning fuels. This pollution looks like soot, containing millions of tiny particles, floating in the air.

Another common type of air pollution is dangerous gases, such as sulfur dioxide, carbon monoxide, nitrogen oxides and chemical vapors. These can take part in further chemical reactions once they are in the atmosphere, creating acid rain and smog. Other sources of air pollution can come from within buildings, such as secondhand smoke.

Noise pollution

Even though humans can't see or smell noise pollution, it still affects the environment. Noise pollution happens when the sound coming from planes, industry or other sources reaches harmful levels. Research has shown that there are direct links between noise and health, including stress-related illnesses, high blood pressure, speech interference, hearing loss.

For example, a study bythe WHO Noise Environmental Burden on Disease working group found that noise pollution may contribute to hundreds of thousands of deaths per year by increasing the rates of coronary heart disease. Under the Clean Air Act, the EPA can regulate machine and plane noise.

Light pollution:

Most people can't imagine living without the modern convenience of electric lights. For the natural world, though, lights have changed the way that days and nights work.

Some birds sing at unnatural hours in the presence of artificial light.

- Scientists have determined that long artificial days can affect migration schedules, as they allow for longer feeding times.
- They often head in the wrong direction.

- Light pollution, called sky glow, also makes it difficult for astronomers, both professional and amateur, to properly see the stars.
- Plant's flowering and developmental patterns can be entirely disrupted by artificial light.

11.Write a note on 1)AIDS 2) HIV

AIDS:

- It is an abbreviation of the word Acquired Immune Deficiency Syndrome. It is caused by the virus HIV. AIDS is a disease of disorder of the body's immune system. Immunity is body's natural resistance to fight against germs and resist diseases.

- **AIDS is transmitted through**

- Sexual contact with an infected person carrying AIDS
- Blood transfusion involving transfusion of blood from an AIDS infected person to a normal person.
- Use of infected needles.
- Infected pregnant mother to her unborn child.
- AIDS is not transmitted by casual social contacts such as shaking hands and sharing a drink.

- HIV is a virus that targets and alters the immune system, increasing the risk and impact of other infections and diseases. Without treatment, the infection might progress to an advanced disease stage called AIDS.

- The life expectancy of a person who carries the HIV virus is now approaching that of a person that tests negative for the virus, as long as

they adhere to a combination of medications called antiretroviral therapy (ART) on an ongoing basis.

- The World Health Organization (WHO) also advises that a person living with HIV can resume a high quality of life with treatment, and that 20.9 million people worldwide were receiving ART as of mid-2017.

- HH
  HIV:

- HIV is a life-changing illness, a person can live a long and full live with it.

- Human immunodeficiency virus (HIV) is a virus that attacks immune cells called CD4 cells, which are a type of T cell.

- These are white blood cells that move around the body, detecting faults and anomalies in cells as well as infections. When HIV targets and infiltrates these cells, it reduces the body's ability to combat other diseases.

- This increases the risk and impact of opportunistic infections and cancers. However, a person can carry HIV without experiencing symptoms for a long time.

- HIV is a lifelong infection. However, receiving treatment and managing the disease effectively can prevent HIV from reaching a severe level and reduce the risk of a person passing on the virus.

- A woman living with HIV who is pregnant or has recently given birth might transfer the disease to her child during pregnancy, childbirth, or breastfeeding.

- The risk of HIV transmitting through blood transfusions is extremely low in countries that have effective screening procedures in place for blood donations.

- **Undetectable = untransmittable**

- To transmit HIV, these fluids must contain enough of the virus. If a person has 'undetectable' HIV, they will not transmit HIV to another person, even if after a transfer of fluids.

- Confirming and regularly monitoring undetectable status using a blood test is important, as this does not mean that the person no longer has HIV.

12.What is the role of an individual in conservation of natural resources?

CONSERVATION OF NATURAL RESOURCES - ROLE OF AN INDIVIDUAL

Different natural resources like forests, water, soil, food, mineral and energy resources play a vital role in the development of a nation .

I. Conserve Water

Use drip irrigation and sprinkling irrigation to improve irrigation efficiency and reduce evaporation. Install a small system to capture rain water and collect normally wasted used water from sinks, cloth-washers, bathtubs etc. which can be used for watering the plants

Build rain water harvesting system in your house. Even the President of India is doing this.

II. Conserve energy

Obtain as much heat as possible from natural sources. Dry the clothes in sun instead of drier if it is a sunny day.

Use solar cooker for cooking your food on sunny days which will be more nutritious and will cut down on your LPG expenses.

Grow deciduous trees and climbers at proper places outside your home to cut off intense heat of summers and get a cool breeze and shade.

III. Protect the soil

If you own agricultural fields, do not over-irrigate your fields without proper drainage to prevent water logging and salinisation.

Use mixed cropping so that some specific soil nutrients do not get depleted.

IV. Promote Sustainable Agriculture

Do not waste food. Take as much as you can eat Reduce the use of pesticides.

13.Explain about the food chain and foot web.

Food chains & food webs:

- **Producers**, or autotrophs, make their own organic molecules. **Consumers**, or heterotrophs, get organic molecules by eating other organisms.
- A **food chain** is a linear sequence of organisms through which nutrients and energy pass as one organism eats another.
- In a food chain, each organism occupies a different **trophic level**, defined by how many energy transfers separate it from the basic input of the chain.
- **Food webs** consist of many interconnected food chains and are more realistic representation of consumption relationships in ecosystems.

- Energy transfer between trophic levels is inefficient—with a typical efficiency around 10%. This inefficiency limits the length of food chains.

Organisms of different species can interact in many ways. They can compete, or they can be symbionts—longterm partners with a close association

In ecology, a *food chain* is a series of organisms that eat one another so that energy and nutrients flow from one to the next

As this example illustrates, we can't always fully describe what an organism—such as a human—eats with one linear pathway

Autotrophs vs. Heterotrophs

Some organisms, called *autotrophs*, also known as self-feeders, can make their own food—that is, their own organic compounds—out of simple molecules like carbon dioxide.

Autotrophs are the foundation of every ecosystem on the planet

.

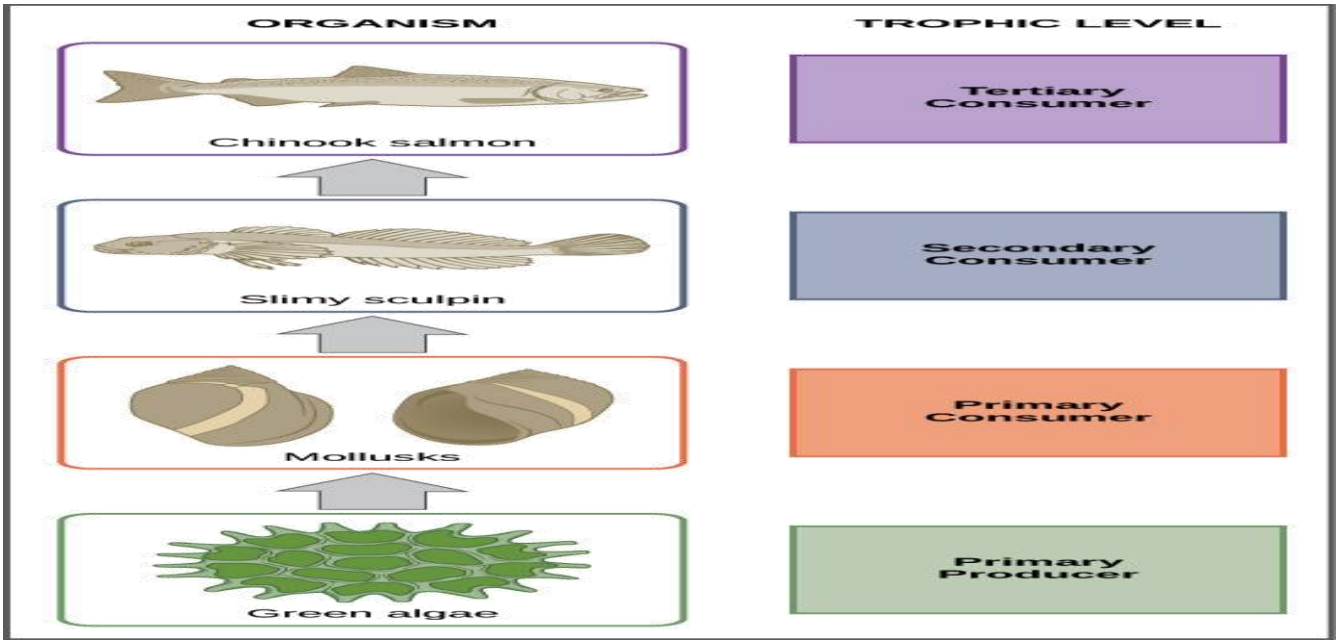
Heterotrophs, also known as other-feeders, can't capture light or chemical energy to make their own food out of carbon dioxide. Humans are heterotrophs.

. As we'll see shortly, there are many different kinds of consumers with different ecological roles, from plant-eating insects to meat-eating animals to fungi that feed on debris and wastes.

Food chains:

A *food chain* is a linear sequence of organisms through which nutrients and energy pass as one organism eats another. Let's look at the parts of a typical food chain, starting from the bottom—the producers—and moving upward.

- At the base of the food chain lie the **primary producers**. The primary producers are autotrophs and are most often photosynthetic organisms such as plants, algae, or cyanobacteria.
- The organisms that eat the primary producers are called **primary consumers**. Primary consumers are usually **herbivores**, plant-eaters, though they may be algae eaters or bacteria eaters.
- The organisms that eat the primary consumers are called **secondary consumers**. Secondary consumers are generally meat-eaters—**carnivores**.
- The organisms that eat the secondary consumers are called **tertiary consumers**. These are carnivore-eating carnivores, like eagles or big fish.
- Some food chains have additional levels, such as **quaternary consumers**—carnivores that eat tertiary consumers. Organisms at the very top of a food chain are called **apex consumers**.



Decomposers:

One other group of consumers deserves mention, although it does not always appear in drawings of food chains. This group consists of **decomposers**, organisms that break down dead organic material and wastes.

Fungi and bacteria are the key decomposers in many ecosystems; they use the chemical energy in dead matter and wastes to fuel their metabolic processes. Other decomposers are **detritivores**—detritus eaters or debris eaters. These are usually multicellular animals such as earthworms, crabs, slugs, or vultures.

Decomposers as a group play a critical role in keeping ecosystems healthy. When they break down dead material and wastes, they release nutrients that can be recycled and used as building blocks by primary producers.

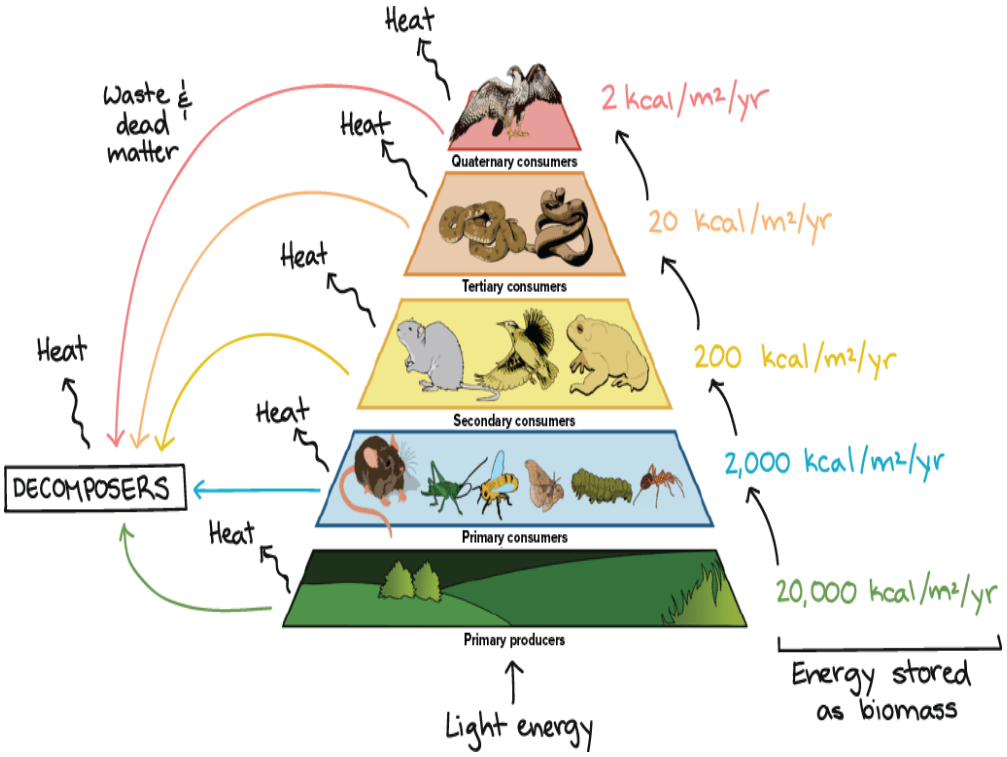
Food webs:

Food chains give us a clear-cut picture of who eats whom. However, some problems come up when we try and use them to describe whole ecological communities.

For instance, an organism can sometimes eat multiple types of prey or be eaten by multiple predators, including ones at different trophic levels. This is what happens when you eat a hamburger patty! The cow is a primary consumer, and the lettuce leaf on the patty is a primary producer.

To represent these relationships more accurately, we can use a *food web*, a graph that shows all the trophic—eating-related—interactions between various species in an ecosystem. The diagram below shows an example of a food web from Lake Ontario. Primary producers are marked in green, primary consumers in orange,

secondary consumers in blue, and tertiary consumers in purple.



For example, in the meadow ecosystem shown below, there is a **grazing food web** of plants and animals that provides inputs for a **detrital food web** of bacteria, fungi, and detritovores. The detrital web is shown in simplified form in the brown band across the bottom of the diagram.

- Some of the organic molecules an organism eats cannot be digested and leave the body as feces, poop, rather than being used.
- Not all of the individual organisms in a trophic level will get eaten by organisms in the next level up. Some instead die without being eaten.

The feces and uneaten, dead organisms become food for decomposers, who metabolize them and convert their energy to heat through cellular respiration. So, none of the energy actually disappears—it all winds up as heat in the end.