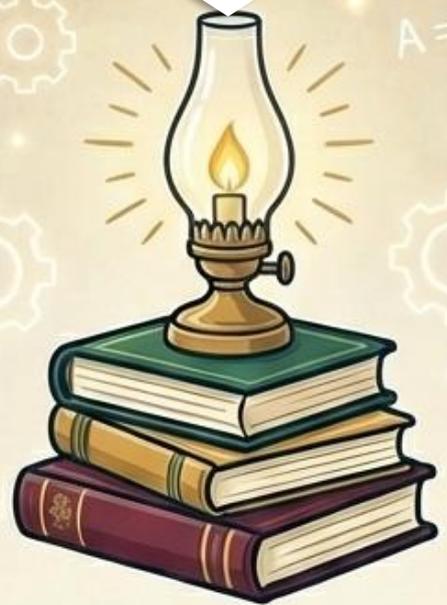




$$A = \frac{m}{(m^2 + c)^2}$$



NIOS PYQ's SOLUTIONS

$$fa = bc^2$$

$$\sqrt{h-x^2}$$

PREVIOUS YEARS' QUESTIONS & ANSWERS



APRIL-2024

Your Path to Success

CORE MODULES

Q 1 - According to an archeological study, foragers lived in/under

- (A) huge canopies of trees
- (B) temporary oval hut like shelters
- (C) large houses made of mud
- (D) permanent built-in houses

Answer - (B) temporary oval hut like shelters

Or

Draught animals are

- (A) animals living in wild
- (B) animals used to carry goods
- (C) animals that provide food
- (D) animals that provide safety and security

Answer - (B) animals used to carry goods

Q 2. The correct order of evolutionary stages of human species is

- (A) Homo habilis, Homo sapiens, Homo erectus
- (B) Homo sapiens, Homo erectus, Homo habilis
- (C) Homo habilis, Homo erectus, Homo sapiens
- (D) Homo erectus, Homo Habilis, Homo sapiens

Answer - (C) Homo habilis, Homo erectus, Homo sapiens



Q 3 - The factors leading to rise in population are

- I. increase in food production
- III. pollution of natural bodies

- II. treatment of diseases
- IV. depleting natural resources

Select the correct answer :

- (A) I and II
- (B) II and III
- (C) I and IV
- (D) II and IV

Answer - (A) I and II

Or

The impact of population growth on environment is

- (A) conservation of water resources
- (B) decreased fossil fuel consumption
- (C) pollution of rivers and other water bodies
- (D) decreased soil pollution

Answer - (C) pollution of rivers and other water bodies

Q 4 - Speciation is a process by which

- (A) adaptation of species occurs
- (B) new species are formed
- (C) variation of species takes place
- (D) dying out of species occurs

Answer - (B) new species are formed

Q 5 Steppes is a

- (A) tropical forest
- (B) desert
- (C) grassland
- (D) temperate forest

Answer - (C) grassland

Or



Animal found in tundra region is

- (A) rabbit (B) reindeer
(C) goat (D) bear

Answer - (B) reindeer

Q 6 - An example of littoral forest ecosystem is

- (A) mangroves` (B) islands
(C) estuaries (D) deltas

Answer - (A) mangroves

Or

Which one of the following is not an example of ecotone?

- (A) Grassland (B) Estuary
(C) Riverbank (D) Pond

Answer - (D) Pond

Q 7. Primitive humans decided to lead a settled life as they

- (A) felt the need for shelter and security
(B) were increased in numbers
(C) found that the food was insufficient through agriculture
(D) were tired of moving around

Answer - (A) felt the need for shelter and security

Q 8 - Slums are

- (A) planned part of villages
(B) planned area of cities
(C) clusters of huts or homes in parts of cities



(D) clusters of huts or homes in villages

Answer - (C) clusters of huts or homes in parts of cities

Or

Difficulty faced by migrants in urban life is

(A) inadequate hygiene and sanitation conditions

(B) poor means of transport and communication

(C) poor educational facilities for children

(D) lack of job opportunities

Answer - (A) inadequate hygiene and sanitation conditions

Q 9 - Providing habitat for various organisms is

(A) productive function of forests

(B) protective function of forests

(C) regulative function of forests

(D) both productive and regulative functions of forests

Answer - (B) protective function of forests

Q 10 - Hereditary diseases are due to

(A) only genetic influences on health

(B) only behavioural influences on health

(C) only environmental influences on health

(D) both behavioural as well as environmental influences on health

Answer - (A) only genetic influences on health



OPTIONAL MODULE-8A

Q 14 - In large cities and towns, groundwater is not fit for drinking, because

- (A) it contains microbes
- (B) it contains high concentration of dissolved minerals
- (C) it contains large amount of suspended particles
- (D) it is coloured

Answer - (B) it contains high concentration of dissolved minerals

Or

The easiest method to remove large suspended impurities from water is

- (A) sedimentation
- (B) coagulation
- (C) microstraining
- (D) chlorination

Answer - (A) sedimentation

Q 15 - Some parts of India suffer from severe water scarcity due to

- (A) lack of sufficient rainfall in the country
- (B) uneven distribution of rainfall in the country
- (C) poor agricultural practices in the country
- (D) droughts in the country

Answer - (B) uneven distribution of rainfall in the country

Or

Tanks, ponds, check dams are structures used to

- (A) store rainwater
- (B) recharge groundwater
- (C) treat surface water
- (D) disinfect surface water]



Answer - (A) store rainwater

Q 16 - The attributes of groundwater are

I. it is sustainable

II. it is easily contaminated

III. it is less polluted

IV. it has a low vulnerability to drought

Select the correct **Answer** -

(A) I, II and III

(B) I, III and IV

(C) II, III and IV

(D) I, II and IV

Answer - (C) II, III and IV

Or

Some techniques of groundwater management and conservation are

I. artificial recharge

II. percolation tank construction

III. catchment area protection

IV. check bund construction

Select the correct **Answer** -

(A) I and II

(B) II and III

(C) III and IV

(D) I and IV

Answer - (A) I and II

OPTIONAL MODULE-8B

Q 14 - Direct use of solar energy is in

(A) wind mills

(B) photosynthesis in plants

(C) photovoltaic cells

(D) tidal power plants

Answer - (C) photovoltaic cells



(D) it will deplete the energy resource

Answer - (A) it is an environment friendly and economically sound action

CORE MODULES

Q - 17

(a) Expand EIA.

Answer - Environmental Impact Assessment

(b) Name two important aspects of EIA.

Answer - important aspects of EIA

1. Risk assessment
2. Environmental management

Or

(a) What is meant by environmental clearance?

Answer - The mandatory approval taken from the government (Ministry of Environment) before starting any large project is called **Environmental Clearance**, which ensures the guarantee that the project will not cause excessive damage to the environment.

(b) Name any two projects requiring environmental clearance.

Answer - Two major projects requiring environmental clearance: -

1. River-Valley Projects
2. Nuclear Power Project

Q 18 - Answer any six questions of the following:

(a) "Evaluation of EIA is possible only if EIA report is reliable." What does this statement mean?

Answer - This statement means that proper evaluation of EIA cannot be done without correct, factual, and trustworthy information.



(b) What are village forests?

Answer - Those forests which are planted on the community land of the village and are managed by the village people for their needs (fuel, fodder).

(c) What is the aim of IPM?

Answer - The objective of Integrated Pest Management (IPM) is to protect crops from pests by using biological methods and reducing the use of chemical pesticides.

(d) Mention two important agriculture inputs that are avoided in organic farming.

Answer - Inputs prohibited in organic farming:

1. Chemical fertilizers (like Urea)
2. Chemical pesticides

(e) How do exotic species often wipe out the native species?

Answer - Exotic species spread rapidly without enemies, snatching food, space, and resources from native species, thereby eliminating them.

(f) How does acid rain affect leaves of plants?

Answer - It destroys the upper protective layer (cuticle) of the leaves, due to which photosynthesis slows down and leaves turn yellow and fall off.

(g) Why should water be conserved for life?

Answer - Because water is the basis of life and the quantity of potable (fresh) water on earth is very limited (less than 1%).

(h) Fossil fuels are called non-renewable fuels. Why?

Answer - Because it takes millions of years to form them and once exhausted, they cannot be created again within our lifetime.

Q 19 - Answer any six questions of the following :

(a) Name a country that had a Forest Policy since 1984.

Answer - India



(b) Expand the abbreviation of IPR.

Answer - Intellectual Property Rights

(c) Which is the most dangerous consequence of population explosion?

Answer - Poverty

(d) Name a chemical compound which is obtained by anaerobic digestion of manure.

Answer - Methane

(e) Name the most abundant group of animals recorded in India.

Answer - Arthropoda

(f) What is the thinning of stratospheric ozone layer over the Antarctic region known as?

Answer - Ozone Hole

(g) Name the major pollutant released from oil refineries.

Answer - Sulfur Dioxide (SO₂)

(h) What is the name given to tropical deciduous forests found in the State of Kerala in India?

Answer - Monsoon Forests

Q 20 - Fill in the blanks by using the appropriate words given below (any four):

(planktons, ex-situ, carcinogenic, carrying capacity, biofuel, work)

(a) Maximum pressure that the environment can withstand on account of human activities is known as_____.

Answer - Carrying Capacity

(b) Energy may be defined as capacity to do_____.

Answer - Work

(c) Organic waste can be converted by bacteria into_____.

Answer - Biofuel



(d) Conservation of plants and animals outside their natural habitat is known as _____ conservation.

Answer - Ex-situ

(e) The cancer-causing agents are known as _____.

Answer - Carcinogenic

(f) Microscopic floating organisms such as algae and protozoans are called _____.

Answer - Plankton

Q 21 - Write True or False (any three) :

(a) A protocol is an international agreement that stands on its own but is linked to an existing convention.

Answer - True ✓

(b) Sustainable development is the development that meets the needs of the present compromising the ability of the future generations to meet their own needs.

Answer - False ✗

(c) Overexploitation is one major cause of environmental degradations.

Answer - True ✓

(d) Nag champa tree can be used to produce biodiesel.

Answer - True ✓

(e) Kinetic energy of wind is converted into electrical energy and used.

Answer - True ✓

OPTIONAL MODULE-8A

Q 22 - Water covers about three-quarters of the earth's surface but how much of it is freshwater?

Answer - 2.5%



(**Additional Info** - Even of this total freshwater, a large part is frozen in glaciers and ice sheets, due to which less than 1% freshwater is easily available for human use.)

Or

Name two sources of freshwater.

Answer - Names of two sources of freshwater:

1. Rivers/Lakes
2. Groundwater

Q 23 - Mention two main techniques of rainwater harvesting. I

Answer - Two main techniques of rainwater harvesting:

1. Rooftop rainwater harvesting
2. Groundwater recharge

Or

Mention how in ancient times houses in Western Rajasthan conserved water.

Answer - In ancient times, there was a system of water collection on the roofs of houses in Rajasthan. Rainwater was transported to underground tanks through drains. This stored water was used for drinking and domestic needs.

Q 24 - What is grey water?

Answer - Grey water is that domestic dirty water which has not come in contact with toilet waste. This is water coming from bathing, showers, wash basins, washing machines, and laundry tubs, which can be reused after treatment.

Or

Mention two ways by which wastewater can be reused.

Answer - Two ways to reuse waste water:

1. Irrigation and gardening
2. For flushing in toilets



OPTIONAL MODULE - 8B

Q 22 - When growth of economy can withstand global competitiveness in terms of energy?

Answer - Energy will be considered capable of facing global competition for the growth of the economy when it is low-cost, cheap, reliable, and environment-friendly, and can effectively meet the growing energy requirements of industries and consumers

Or

Give one important impact of energy use on environment.

Answer - Excessive use of energy leads to depletion of energy resources and burning of fossil fuels increases the emission of greenhouse gases leading to environmental pollution.

Q 23 - What is bagasse?

Answer - Bagasse is the fibrous residue left after extracting juice from sugarcane, which is used as fuel or in making paper

Or

Define methanogenesis.

Answer - Methanogenesis is the microbial process in which certain special bacteria decompose organic matter in anaerobic conditions to produce methane gas.

Q 24 - What is the cause of air becoming wind?

Answer - The reason for air changing into wind is the temperature difference between the equator and the poles and the rotation of the earth, which creates air flow.

Or

Why is wind energy called indirect solar energy?

Answer - Wind energy is called indirect solar energy because the heat of the sun creates a difference in air pressure on earth. Due to this pressure difference, wind blows, from which wind energy is obtained.



CORE MODULE

Q 25 - What all is assessed in EIA?**Answer - Things evaluated in EIA are :-**

1. Study of the current status of the environment and the impact on air-water-land-living organisms before the project.
2. Estimation of potential side effects of the proposed scheme and the impact on nearby people.

Q 26 - How are forests getting denuded?**Answer -** Forests are becoming treeless due to the cutting of trees for farming, house building, furniture, and fuel. The rate of tree cutting is much higher than their growth rate, so forests are finishing quickly.

Or

Why is extinction of wildlife species on the rise?**Answer -** Due to deforestation and destruction of forests, the natural habitat of wildlife is being destroyed. Therefore, they do not find space for food, shelter, and breeding, due to which the extinction of wildlife species is increasing.**Q 27 - Differentiate between rural and urban settlements on the basis of the following factors:****(a) Occupation****(b) Population density****Answer - Difference between Rural and Urban settlements: -**

Basis	Rural	Urban
(a) Occupation	Farmers and their families are engaged in agricultural work in large numbers. Only a few people are in non-agricultural occupations.	Mostly industrial workers, traders, professionals, administrative people working in offices. All non-agricultural occupations.



(b) Population Density	Relatively low population density.	Very high population density.
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Q 28 - This is an extensive, sandy region in North-West India and Eastern Pakistan. Identify this region and name one plant species, one animal species and one bird species found in this region.

Answer - This region is the **Thar Desert**.

Category	Name
Plant Species	Cactus
Animal Species	Desert Fox
Bird Species	Great Indian Bustard

Q 29 - Give two reasons to show the importance of conservation of biodiversity.

Answer - Two reasons to state the importance of conservation of biodiversity:

- To preserve the genetic diversity of species.
- To save species from extinction and maintain the balance of the ecosystem.

Q 30 - What are two strategies for effective management and conservation of water?

Answer - Two strategies for efficient management and conservation of water:

- **Rainwater Harvesting** : Collecting rainwater on roofs or in ponds to increase the groundwater level.
- **Drip Irrigation** : Giving water drop by drop directly to the roots of plants in farming so that water is not wasted by evaporation.

Q 31 - Explain the following terms:

(a) Mutualism

Answer - Mutualism is that relationship in which two different species live together and both benefit. For example, the Sea Anemone gets food and transport, while the Hermit Crab gets protection and camouflage.



(b) Commensalism

Answer - Commensalism is that biological relationship in which one species obtains benefit, while the other species is neither benefited nor harmed. For example, the Remora fish obtains protection, transport, and food from the Shark.

Or

What is ecological succession? Name different types of ecological successions.

Answer - The process by which changes occur in vegetation and animal communities in an area over time and one community is replaced by another community is called **Ecological Succession**. It has two types:

1. Primary Succession
2. Secondary Succession

Q 32 - Explain the role of the following in agriculture as biofertilizers::**(a) Rhizobium**

Answer - This bacterium lives in the root nodules of leguminous (pulse) crops and converts atmospheric nitrogen into nitrate, which makes the soil fertile.

(b) Azospirillum

Answer - This bacterium lives freely near the roots of grass family plants (like Maize, Wheat) and performs nitrogen fixation.

Or

In the context of soil management, give two objectives of varietal improvement of crops?

Answer - Two objectives of developing crop varieties in the context of soil management are:

1. To develop crop varieties giving high productivity.
2. To develop varieties with resistance capacity against diseases, pests, and adverse environmental conditions (drought, heat, frost, etc.).



Q 33 - Define population. Why is it important to study population? Explain any one point. List four major periods of human population growth.

Answer - Population is a group consisting of such individuals living in the same area who are capable of interbreeding and exchanging genetic material. **Necessity of Population Study:**

- In providing data on current and future available manpower.
- In estimating the expected total quantity of goods or services in the present and future.
- In promoting cultural, regional, and linguistic harmony. **Four main epochs of human population growth :**
 1. **Initial stage of Hunters and Gatherers** – At this time population was very low.
 2. **Stage of Agricultural Development** – Population increased due to the development of agriculture.
 3. **Stage of Industrial Revolution** – Rapid population growth occurred due to improvements in food and health facilities.
 4. **Current Stage** – Population growth is slow in developed countries, while it is fast in developing countries.

Or

What happens when cities grow? Explain the harmful effects of urbanization on the following:

(a) Forests

(b) Socio-economic factors

(c) Availability of water

Answer - With the growth of urbanization, pressure on natural resources increases. Migration from villages to cities, expansion of industries, and increasing population affect forests, socio-economic systems, and water resources.

(a) Impact on forests : Forests are cut for the expansion of cities. Due to this, forest habitats decrease, biodiversity decreases, and soil erosion increases. Cutting of forests reduces carbon dioxide absorption and atmospheric pollution increases.



(b) Impact on socio-economic factors : Crowding and unemployment increase due to urbanization. Inequality, poverty, and social evils increase due to less living facilities in cities. Standard of living falls due to lack of health, sanitation, and housing, and crime and stress increase.

(c) Impact on availability of water : Demand for water increases due to urbanization and pressure on water sources increases. Rainwater percolates less, underground water level falls. Pollution, dirty water, and garbage contaminate water sources, leading to a shortage of freshwater.

Q 34 - What is meant by a biosphere reserve? What are its various zones? Give the main functions of a biosphere reserve?

Answer - A Biosphere Reserve is such a protected area where long-term conservation of ecosystems and their genetic resources is done. It was started under UNESCO's "**Man and Biosphere Programme**" in 1975, whose objective is to take conservation, sustainable development, and scientific research together.

1. **Core zone :** This is a fully protected natural area where human activities are minimal. Entry is only on special permission and destructive sampling is prohibited in scientific research.
2. **Buffer zone :** Area situated around the core zone, where limited human activities are conducted in an environment-friendly manner.
3. **Transition zone :** This is the outer area where local people do activities like settlements, farming, forestry, tourism, etc., but maintain harmony with conservation objectives.

Main functions of Biosphere Reserve :

1. **Conservation :** Long-term conservation of various ecosystems, species, and genetic resources.
2. **Development :** Promoting sustainable use of traditional resources and encouraging socio-economic development.
3. **Scientific Research, Monitoring & Education :** Supporting research related to conservation, environmental monitoring, and exchange of education-information.



Q 35 - What do you understand by ecological efficiency? Why does the amount of energy decrease at each subsequent trophic level? If autotrophs produce 100 cal of energy, how much energy will be available to herbivores and carnivores? How can ecological efficiency be expressed?

Answer - The percentage amount of energy transfer from one Trophic Level to the next Trophic Level is called **Ecological Efficiency**. According to Lindeman's '**10% Law**', only about 10% of energy is transferred from one level to another.

Reason for energy loss : At each level, organisms lose a large part of the received energy (about 90%) in their respiration process, movement, maintaining body temperature, and as undigested food. Therefore, very little energy remains for the next level.

Mathematical Example : If Autotrophs (Plants) = produce 100 calories.

- Herbivores will get = 10% of 100 = 10 calories.
- Carnivores will get = 10% of 10 = 1 calorie.

$$\text{Ecological Efficiency} = \frac{\text{Energy stored in next trophic level}}{\text{Energy available in previous trophic level}} \times 100$$

Q 36 - What is noise pollution? What are its sources? Give two effects of noise pollution on humans. In which ways it can be controlled?

Answer - Such unwanted and intense sound in the environment which is harmful to human health and wildlife is called **Noise Pollution**. It is measured in Decibels (dB).

Sources of Noise Pollution :

- (1) **Indoor sources** : Radio, television, generator, fans, air conditioner, household appliances, and family disputes.
- (2) **Outdoor sources** : Loudspeakers, industries, motor vehicles, trains, airplanes, markets, religious-social events, political rallies, and fireworks.

Two effects of noise pollution on humans :

1. Generation of high blood pressure, stress, anger, and mental depression.
2. Disturbance in sleep, decrease in work efficiency, and impairment of hearing power.



Control of Noise Pollution : To control noise pollution, proper maintenance of vehicles and machines, control on the use of loudspeakers, use of soundproofing equipment in industrial areas, ban on loud music and fireworks at night, and planting Green Belts (dense trees) near roads and buildings are necessary.

Or

With reference to water pollution, explain the following terms:

(a) Point source pollution

Answer - Point source pollution is that water pollution in which pollutants are released directly into water sources through drains or pipes from a fixed place, like factories or sewage plants.

(b) Thermal pollution

Answer - Thermal pollution is the condition when hot water discharged from power plants or industries is released into rivers, lakes, or the sea. This increases the water temperature, decreases dissolved oxygen, and has an adverse effect on aquatic organisms.

(c) Eutrophication

Answer - Eutrophication is the process in which excessive growth of algae and aquatic plants occurs due to an excess of nutrients in water bodies, which decreases dissolved oxygen and aquatic organisms die.

(d) Sewage

Answer - Waste and dirty water flushed from domestic works and industries, and contaminated water coming out of garbage heaps is called Sewage. It also includes rainwater and water flowing from the land surface.

(e) Non-point source pollution

Answer - Non-point source pollution is that water pollution in which pollutants do not reach water from a fixed place, but flow from a large area like farms, pastures, construction sites, empty mines, roads, and streets.



OPTIONAL MODULE-8A

Q 37 - Give two abstractive uses of water.

Answer - Two examples of abstractive use of water:

1. **Domestic Use** : Extracting water from the source for drinking, bathing, cooking, and cleaning.
2. **Agricultural Use** : Extracting water from canals or tube wells for irrigation of crops.

Q 38 - List any four reasons for growing water shortage problem in the world.

Answer - Any four reasons for the increasing problem of water scarcity in the world:

1. Droughts
2. Increasing demand for irrigation
3. Industrial demand
4. Pollution, reduction in the use of water resources

Or

List four benefits of rainwater harvesting.

Answer - Four benefits of rainwater harvesting :

1. Availability of water increases.
2. Helps in controlling the declining water table.
3. It is beneficial for the environment.
4. Helpful in protection from soil erosion and floods

Q 39 - What is watershed? Why is the water passing through the forests relatively pure?

Answer - A watershed is a geographical area where rainwater collects and flows into rivers, lakes, or streams. Water flowing through forests is relatively pure because vegetation, soil, and organic layers naturally filter pollutants and impurities.

Or

What do you understand by artificial recharge to groundwater? Mention any two methods of artificial recharge in urban areas.

Answer - Artificial recharge of groundwater is the process in which replenishment is increased by filling water rapidly into groundwater reserves through man-made structures.



Two methods of artificial recharge in urban areas:

1. Collecting rainwater on the roof and sending it into the ground.
2. Making pits/trenches/wells to let water go down.

OPTIONAL MODULE-8B**Q 37 - What are photovoltaic cells? Give their two uses.**

Answer - Photovoltaic cells are those cells that directly convert sunlight into electricity.

Two uses of them:

1. To provide electricity in Solar TV.
2. To generate electricity in homes in solar panels.

Q 38 - Define geothermal energy. Give two examples from where this energy can be trapped in India.

Answer - Geothermal Energy is that natural heat stored inside the earth, which is mainly used for electricity generation and heating buildings.

Examples in India :

- Puga Valley in Ladakh region.
- North-Western Himalayan Region.

Or

What is a fuel cell? What is the impact of use of fuel cells on environment?

Answer - A fuel cell is a device that mixes hydrogen and oxygen to make electricity directly. No smoke or dirty gases come out of it, only water vapor is formed. Therefore, it is very good for the environment.

39. What do you understand by energy audit? What is the role of energy auditing?

Answer - Energy audit is a systematic process by which the use and wastage of energy in an institution or industry are detected. Its role is to identify areas of high energy consumption, find opportunities for energy conservation, reduce costs, and bring awareness about energy saving among employees.

Or



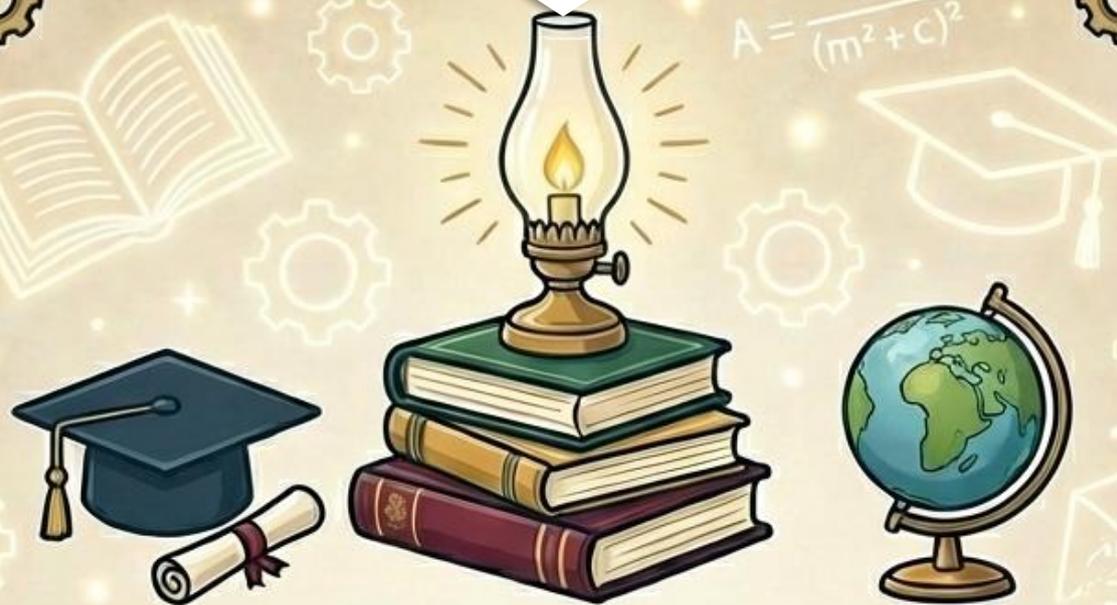
What do you understand by energy efficient new towns? How can such towns be created?

Answer - Energy efficient new cities are such towns where energy is used thoughtfully and with less wastage. Such cities can be built by effective land use, environment-friendly buildings, renewable energy sources, better water-sewer systems, and education and awareness of energy conservation among citizens.





$$A = \frac{m}{(m^2 + c)^2}$$



NIOS PYQ's SOLUTIONS

$$fa = bc^2$$

$$\sqrt{h-x^2}$$

PREVIOUS YEARS' QUESTIONS & ANSWERS



OCTOBER-2024

Your Path to Success

CORE MODULE

1. Which human ancestors made better tools with stones?

- (A) Homo sapiens
- (B) Homo erectus
- (C) Homo habilis
- (D) Australopithecus

Answer - (B) Homo erectus

2. The most glaring of all oceanic pollution is due to:

- (A) Oil spill
- (B) Dumping of hazardous waste
- (C) Rivers carrying chemical and trash
- (D) Coastal activities

Answer - (A) Oil spill

3. Among the following, which symptom is not related to blue baby disease?

- (A) Poor feeding
- (B) Increased energy
- (C) Decreased energy
- (D) Sleepy

Answer - (B) Increased energy

4. The evolutionary force which brings about greater reproduction of adaptive variation is?

- (A) Extinction



(B) Isolation

(C) Natural selection

(D) Variation

Answer - (C) Natural selection

5. Which among the following is a characteristic feature of urban communities?

(A) Joint family system

(B) Individualism

(C) Illiteracy

(D) Jajmani system

Answer - (B) Individualism

6. An agriculture practice which involves enhancing crop productivity in the land with the use of agricultural implements and agrochemicals is:

(A) Extensive agriculture

(B) Eutrophication

(C) Siltation

(D) Intensive agriculture

Answer - (D) Intensive agriculture

7. A 12,000 year old practice of food production which causes extreme deforestation is:

(A) Shifting cultivation

(B) Urbanization

(C) Commercial cultivation



(D) Indigenous cultivation

Answer - (A) Shifting cultivation

8. Ecologically vegetation of the major part of Thar desert region falls under the category of:

(A) Succulents

(B) Shrubs

(C) Deciduous trees

(D) Thorn forest type

Answer - (D) Thorn forest type

9. Making wooden boxes from various tree species for transporting apples has resulted in:

(A) Desertification

(B) Forest degradation

(C) Urbanisation

(D) Biodiversity enhancement

Answer - (B) Forest degradation

10. The chemical responsible for the Minamata disease is:

(A) Mercury

(B) Arsenic

(C) Lead

(D) Copper

Answer - (A) Mercury



11. Chemical pesticides are considered harmful because:

- (i) They cause river pollution
- (ii) Their concentration increases through the food chain
- (iii) They are carried away by run-off water from fields to lakes and pollute ground water

Select the most appropriate option:

- (A) (i), (ii) and (iii)
- (B) (i) and (iii)
- (C) (ii) and (iii)
- (D) (i) only

Answer - (A) (i), (ii) and (iii)

12. Identify in-situ conservation of bio-diversity among the following:

- (A) Wildlife sanctuaries
- (B) Botanical garden
- (C) Zoos
- (D) Medicinal plant park

Answer - (A) Wildlife sanctuaries

13. Which statement is incorrect regarding crop rotation?

- (A) Crops requiring less manure should be sown after the one that requires more manure.
- (B) Crops that require less water should be grown after the one that requires more water.
- (C) Leguminous crop is to be grown before non-leguminous crop.
- (D) Crop rotation pattern: green gram-wheat-moong.



Answer - (D) Crop rotation pattern: green gram-wheat-moong.

OPTIONAL MODULE - A

14. World's shortage of water is due to:

- (a) Irrigation demand
- (b) Industrial demand
- (c) Wastage of water
- (d) Pollution of water

Select the most appropriate option from the above:

- (A) (a), (b) and (c)
- (B) (c) and (d)
- (C) (a), (b), (c) and (d)
- (D) (b) only

Answer - (C) (a), (b), (c) and (d)

15. The four main components of harvesting rain water at household level is in the following correct sequence:

- (A) Storage, collection, maintenance, distribution
- (B) Collection, Storage, distribution, maintenance
- (C) Maintenance, Storage, distribution, collection
- (D) Collection, maintenance, distribution, storage

Answer - (B) Collection, Storage, distribution, maintenance



16. High level of fluoride in water can be removed at household level by:

- (A) Chlorination
- (B) Passing ozone
- (C) By using microstrainers
- (D) Adding alum, lime and bleaching powder

Answer - (D) Adding alum, lime and bleaching powder

OPTIONAL MODULE - B

14. Generation of electricity by using the force of falling water is called:

- (A) Tidal power
- (B) Wind power
- (C) Hydel power
- (D) Geothermal power

Answer - (C) Hydel power

15. *Jatropha curcas* is known to be a petro crop as it is:

- (A) Unfit for eating by humans or animals
- (B) Grown on land fit for agriculture
- (C) Hydrocarbon producing plant and an ideal alternative energy source.
- (D) Produces petrol like secretions

Answer - (C) Hydrocarbon producing plant and an ideal alternative energy source.



16. A teacher suggested the students to replace ordinary bulbs at home with CFL bulbs as this action will help by:

- (A) Energy loss reduction
- (B) Process modification
- (C) Reducing light load
- (D) Energy auditing

Answer - (A) Energy loss reduction

CORE MODULES

17. Write two criteria for determining a hot spot.

Answer - Two criteria for determining a hotspot are:

1. The area must contain at least 1,500 species of vascular plants (> 0.5% of the world's total) as endemics.
2. It must have lost at least 70% of its original habitat.

18. Answer in one or two sentences. (15-20 words)

(A) Name one biodiesel yielding plant.

Answer - Jatropha curcas.

(B) What are the constituents of biogas?

Answer - Biogas constituents are Methane (CH₄), Carbon dioxide (CO₂), Hydrogen, and Hydrogen sulphide.

(C) Electrical appliances have BEE rating. In what way does it help in conservation of energy?

Answer - It is a rating given by the 'Bureau of Energy Efficiency' (BEE) which indicates the energy efficiency of appliances; more stars mean less power consumption.



(D) Sustainable development is important for mankind. Why?

Answer - Sustainable development is essential because it meets present needs while preserving the environment and securing natural resources for future generations.

(E) Blue green algae is considered as a bio-fertilizer. Justify.

Answer - They fix atmospheric nitrogen into the soil (Nitrogen Fixation), thereby increasing soil fertility. Hence, they are considered bio-fertilizers.

(F) CNG for public transport vehicles was made mandatory in Delhi after passing of this act in 1986. Name the act.

Answer - The Environment (Protection) Act, 1986.

19. Answer the questions in one word.

(A) The study of size, growth, age, structure of a population.

Answer - Demography

(B) Succession that occurs on land where moisture content is low.

Answer - Xerarch

(C) A biotic component of ecosystem feeding on dead organic matter.

Answer - Decomposers

(D) If autotrophs produce 100 Cal, herbivores will be able to store 10 Cal and carnivores 1 Cal. Identify the rule defined by Lindeman in 1942.

Answer - Ten percent law

(E) A transgenic rice variety which can be grown on saline soil and is enhanced with Vit. A.

Answer - Golden Rice



(F) A place where a river or a stream opens into the sea and is a dynamic and productive ecosystem.

Answer - Estuary

20. Fill in the blanks by using the appropriate terms from the bracket.

(Coal dust, lead, auditory fatigue, malaria)

(A) Black lung disease is caused by inhalation of small amounts of _____.

Answer - coal dust

(B) Heavy metal known to cause toxic effects in living organism and cause neurological damage is _____.

Answer - lead

(C) When noise level is in the range of 85 to 90 dB it may result in _____.

Answer - auditory fatigue

(D) An example of disease transmitted by vector having symptoms of shivering chills and sweating is _____.

Answer - malaria

21. Identify whether the following statement is true or false.

(A) EIA is a tool for anticipating any harmful effects or developmental activities on the environment.

Answer - True

(B) A protocol is an international agreement that does not stand on its own and is not linked to any existing convention.

Answer - False



(C) Monoculture uses very less fertilizer, pesticide and water.

Answer - False

OPTIONAL MODULE

22. Algal bloom is not desirable for balanced aquatic ecosystem. What nutrients promotes this?

Answer - Nitrate and Phosphate.

23. Which are the two main techniques involved in rain water harvesting?

Answer - Two main techniques are:

1. Rooftop rainwater harvesting.
2. Surface runoff harvesting.

24. Antitranspirants is a moisture conservation technique. Name any two antitranspirants.

Answer - Two antitranspirants are:

1. Kaolin
2. Lime wash (or Phenyl Mercuric Acetate)

OPTIONAL MODULE - B

22. Tidal power has limitations as a source of electricity. Why?

Answer - Tides occur only twice a day, so it cannot provide continuous electricity. It is also limited to coastal areas with sufficient tidal height.

23. Why biomass energy is gaining significance?

Answer - Biomass is gaining significance because it is a renewable source, locally available, converts waste into useful energy, and maintains carbon dioxide balance in the atmosphere.



24. Ecohouse is an energy efficient building. Identify any two technologies used in this house which makes it energy efficient.

Answer - Two technologies used in an Ecohouse:

1. Integrated solar water heater on the roof.
2. Window-mounted solar cooker.

CORE MODULES

25. Modern influx of human population from villages to cities is a serious concern to urban planners. Why?

Answer - The massive migration from villages to cities puts immense pressure on urban infrastructure. This leads to serious problems like the emergence of slums, housing shortages, unemployment, traffic jams, and severe water and air pollution, which are major concerns for urban planners.

26. How is neutralism different from symbiosis? Explain with an example.

Answer - In Neutralism, two species do not affect each other.

In Symbiosis (Mutualism), species are fully dependent on each other for survival and cannot live separately.

Example: Termites and the flagellates living in their gut cannot survive without each other.

OR

How is a habitat different from niche?

Answer - A Habitat is the physical place or 'address' where an organism lives (e.g., a forest or ocean). In contrast, a Niche is the functional role or 'profession' of the organism within that environment, including its food habits and behavior.

27. IUCN has categorised threatened species into four categories. Name the four categories.

Answer - The four IUCN categories are:



1. **Endangered** : Species with very few numbers (e.g., Lion-tailed macaque).
2. **Rare** : Species found in limited areas (e.g., Great Indian Bustard).
3. **Depleted** : Species whose numbers are constantly declining (e.g., Leopard).
4. **Indeterminate** : Species in danger but sufficient information is not available (e.g., some wild plant species).

28. Biological diversity has social and cultural benefits. Discuss these social and cultural benefits.

Answer -

- **Cultural Benefits** : Biodiversity holds cultural significance as many plants and animals are linked to religion and rituals (e.g., Tulsi, Peepal, Sacred Groves).
- **Social Benefits** : It serves as a source for tourism, recreation, and aesthetic beauty, providing mental peace and community identity.

29. What way will you adopt and propagate water conservation?

Answer - I will install a Rainwater Harvesting system in my home. I will practice Recycling of water in daily life, such as using water from washing clothes for mopping. Additionally, I will propagate the "Save Water" campaign in society through street plays (Nukkad Nataks).

30. What are the two main intent of biodiversity legislation?

Answer - The two main objectives of biodiversity legislation are:

1. **Conservation of biological resources**: Protecting endangered species and their habitats.
2. **Equitable sharing of benefits**: Ensuring that benefits arising from the use of bio-resources are fairly shared with local communities and knowledge holders.



31. Mycorrhizal fungus has an important role in agriculture. Explain it.

Answer - Mycorrhiza is a symbiotic association between fungi and plant roots. The fungus absorbs phosphorus and other nutrients from the soil and provides them to the plant, which enhances crop growth and reduces the need for chemical fertilizers.

OR

A practice of growing different crops in regular succession in the same field controls insects and increases soil fertility.

Answer the following questions:

(A) Which crop practice is this?

Answer - This is Crop Rotation.

(B) What is the name given when two or three different crops are grown in succession in the same field?

Answer - This is called Multiple Cropping.

32. Why is Environmental Impact Assessment (EIA) important? What environmental components are looked into by EIA?

Answer - EIA ensures that any development project (like dams or factories) does not have a serious negative impact on the environment, supporting sustainable development.

Components: It looks into the Air environment, Water resources, Noise levels, Biological environment (flora/fauna), and Socio-economic status.

OR

What does biodiversity act 2000 aims at regulating and when was the bill passed by loksabha?

Answer - The Biodiversity Act 2002 aims to regulate access to India's biological resources and prevent Biopiracy. This bill was passed by the Lok Sabha in December 2002.



33. What is meant by green house effect? Which three steps would be useful in reducing emission of greenhouse gases into the atmosphere?

Answer - The Greenhouse Effect is the process where gases (like CO_2 , Methane) in the atmosphere trap the sun's heat, causing the Earth's temperature to rise.

Three steps to reduce emissions:

- 1. Less use of fossil fuels:** Increasing the use of renewable sources like solar and wind energy instead of coal and petrol.
- 2. Afforestation:** Planting more trees as they absorb CO_2 .
- 3. Energy Efficiency:** Using power-saving appliances (LEDs) and stopping the emission of Chlorofluorocarbons (CFCs).

OR

When soil is said to be polluted? What are the sources of soil pollution and how will you control it?

Answer - Soil is said to be polluted when chemical fertilizers, pesticides, or industrial waste mix with it, degrading its quality.

Sources: Agrochemicals (pesticides/fertilizers), industrial waste, urban garbage, and plastic waste.

Control:

- 1. Organic Farming:** Using manure instead of chemicals.
- 2. Recycling:** Proper management and recycling of plastic and solid waste.
- 3. Bioremediation:** Using microorganisms to degrade pollutants.

34. As an environmentalist suggest some energy efficiency methods, which you will adopt:

(A) at home

(B) at your work place



(C) for transport

(D) as a community

Answer -

(A) At home: Use LEDs instead of ordinary bulbs and switch off lights when not in use. Use pressure cookers for cooking.

(B) At work place: Maximize the use of daylight and keep computers on 'sleep mode'. Use stairs instead of lifts.

(C) For transport: Use public transport (Bus/Metro) or Car-pooling instead of private cars.

(D) As a community: Install solar street lights and create awareness among people about energy conservation.

35. (A) Suggest how different devices can be used in industries to control industrial pollution.

(B) Name the pollutant which can be removed.

(C) Also mention any two control measures to control industrial pollution.

Answer -

(A) Use of devices : Special equipment is installed in chimneys to stop smoke and particles. For example:

- **Electrostatic Precipitator (ESP):** Removes ash and fine dust particles from smoke using electric charge.
- **Scrubber:** Smoke is passed through water or lime spray to clean gases like Sulphur Dioxide (SO₂).
- **Bag Filters:** These act like cloth bags that filter dust from the air.

(B) Pollutant Removed : Sulphur Dioxide (SO₂) can be effectively removed.

(C) Control Measures:

1. **Clean Technology:** Using less polluting fuels (like gas instead of coal).
2. **Green Belt:** Planting dense trees around industries to absorb pollution and noise.



36. What are the three characteristics of Mangrove ecosystem which identifies them as a highly productive ecosystems. Where are they found and also mention the names of natural calamities from which they protect the shore line.

Answer -

Characteristics:

1. **Pneumatophores:** Roots grow above the ground to breathe in marshy soil.
2. **Vivipary:** Seeds germinate while still attached to the parent tree to avoid rotting in saline water.
3. **Salt Tolerance:** Adapted to survive in high salinity water.

Location: Found in the Ganga-Brahmaputra Delta (Sunderbans), Mahanadi, and Krishna-Godavari estuaries in India.

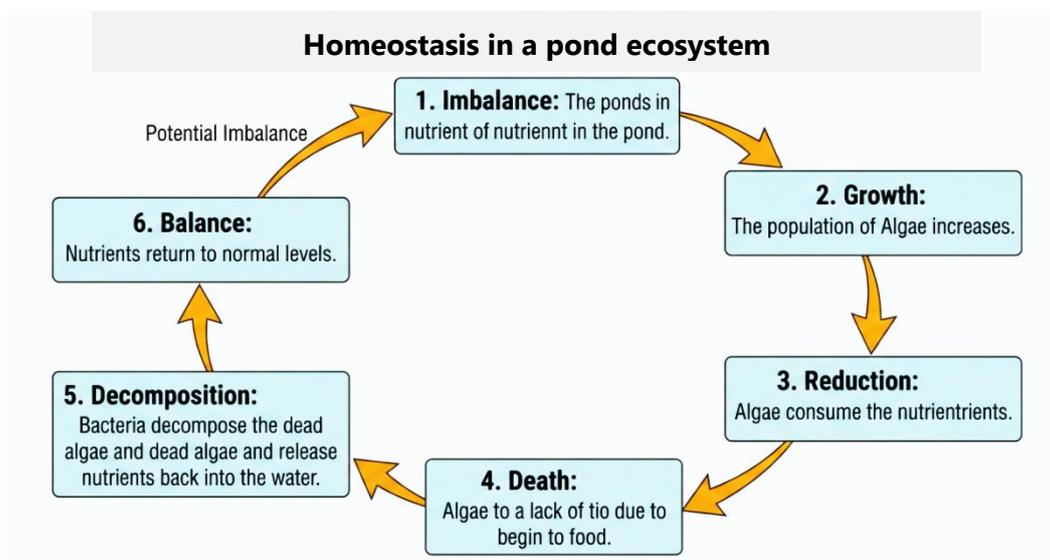
Protection: They protect the shoreline from Cyclones, Tsunamis, and Soil Erosion by acting as a natural wall.

OR

Explain with a flow chart how homeostasis is maintained in a pond ecosystem.

Answer - Homeostasis in a pond ecosystem refers to maintaining natural balance.

In a pond ecosystem, homeostasis means maintaining a natural balance. When nutrient levels increase, algae grow rapidly. This leads to a decrease in oxygen, which then causes the algae to die off, and the balance is restored. This process occurs through negative feedback.



OPTIONAL MODULE - 8A

37. Define the term disinfection of water. List any two ways by which disinfection of water can be done.

Answer - Disinfection means killing harmful pathogens (bacteria/viruses) from water to make it potable (drinkable).

Two ways:

1. **Boiling:** Boiling water for 15-20 minutes.
2. **Chlorination:** Adding chlorine tablets or bleaching powder to water.

38. Suppose you are conducting a water audit of your house, which steps of water conservation you will identify while conducting this audit?

Answer - While conducting a water audit, I will check if there are any leaking taps. I will monitor how much water is consumed in bathing, washing dishes, and flushing. Based on this, I will implement measures like using low-flow flush tanks and using buckets instead of showers.

OR

Write one application of the following:

(A) Single stem harvesting

(B) Contour farming

Answer -

(A) Single stem harvesting: In crops like groundnut, plucking only the pods instead of uprooting the whole plant allows roots to remain in the soil, maintaining nitrogen and moisture.

(B) Contour farming: Farming on hill slopes by creating steps (terraces) to slow down water flow and prevent soil erosion.



39. What are the four changes that were brought in the face of Bhikampura in Alvar district by Tarun Bharat Singh?

Answer - Changes in Bhikampura brought by Tarun Bharat Sangh:

1. Water started returning due to proper conservation methods (building Johads and dams).
2. The dry river (Arvari) was rejuvenated and started flowing again.
3. The revival of the river transformed the ecosystem and the lives of people living on the banks.
4. The people's bond with their natural environment became stronger.

OR

List two examples of individual and community action on rain water harvesting in Gujarat.

Answer -

1. **Gandhigram (Kutch):** Villagers formed a 'Gram Vikas Mandal' and built a Check Dam on a seasonal river through 'Shramdan' and bank loans, solving the water problem.
2. **Bhavnagar University:** Students and staff dug a Percolation Tank in the campus, which raised the water level of nearby wells and borewells.

OPTIONAL MODULE - 8B

37. Write the disadvantages and advantages of use of geothermal energy.

Answer - Geothermal Energy

- **Advantages:** It is pollution-free, provides continuous (24x7) electricity, and requires no fuel cost.
- **Disadvantages:** It is available only at specific locations (where hot springs exist) and sometimes releases harmful gases like H_2S .

38. Write two examples where passive solar energy is utilised.

Answer - Examples of Passive Solar Energy:



1. **Solar Cooker (Box Type):** Cooking food directly using sunlight without machinery.
2. **Solar Drying:** Drying crops, grains, or clothes by spreading them directly in the sun.

OR

Write any four ways by which you would like to conserve energy while using microwave ovens.

Answer -

1. Thaw frozen food outside before putting it in the microwave.
2. Cover the food with a lid so steam helps it cook faster.
3. Cut food into small pieces for quicker cooking.
4. Do not open the oven door frequently, as it reduces heat.

39. Suggest energy conservation at community level for housing complexes.

Answer - For housing complexes, Solar Water Heaters and Solar Street Lights should be installed. Timings should be fixed for lifts and water pumps. Biogas plants should be installed to generate gas from kitchen waste. Collective use of CFLs/LEDs should be made mandatory.

OR

What is the role of energy audit in conservation process?

Answer - An Energy Audit identifies where and how much energy (electricity/fuel) is being wasted in an institution or industry. It suggests measures to reduce energy consumption, which lowers electricity bills and reduces environmental damage. It is the first step towards improvement.





Thank you!



We hope you found this material helpful. We wish you the very best for your examination.



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