

Pollutants :

Materials which are harmful to organisms are called pollutants.

Pollution :

Undesirable change in physical, chemical or biological characteristics of air, land, water or soil is called pollution.

- The Government of India has passed the Environment (protection) Act, 1986.

Air pollution and its control :**effects :**

- on respiration of organisms
- reduce the growth and yield of crops

main source :

(a) fossil fuel (b) vehicular exhaust

Control :

- Photochemical smog should be eliminated as far as possible.
- Development of electrical and solar-energy controlled vehicles.
- Particulate matter produced by industries and thermal power plants can be controlled by
(a) scrubbers (b) electrostatic precipitator (c) filters.

(a) **Scrubbers** : It can remove gases like SO_2 .

(b) **Electrostatic precipitator** : Electric charge is generated on the particles in the smoke and they are down towards electrodes and removed. Around 99% particulate matter can be removed.

(c) **Filters** : Sieves of different sized can remove specific particles of sizes.

- Research by Central Pollution Control Board (CPCB) - particles having size of 2.5 micrometers or less in diameter are responsible for causing greatest harm to lungs and health of human.
- **Act :**
India, Air (prevention and control of pollution), 1981.
 - In 1987 this act include noise as an air pollution.
 - 80 db (decible) intensity or more sound is harmful to human health, it damages corticells of ears.
- Study of air pollution reveals,
 - Every year about 4,50,000 vehicles are added to the roads of the state.
 - Pollutants added by vehicles : SO_2 , NO_2 , SPM (Suspended Particulate Matter)
 - 18% increase in CO at evening time.
 - NIOH (National Institute of Occupational Health, Ahmedabad) observed that air pollution at street junctions and people living here suffered from cough and congestions.

Check on transport system :

- State government has established “Commissionerate of Transport.” initiated “Pollution Under Control System” in 1995.
- EURO-III norm, newly labeled as BHARAT-III has been implemented in Ahmedabad and Surat.

CNG :

- CNG vehicle increase.
- CNG is not carcinogenic (not cause for cancer).
- Companies provide CNG to cities of Gujarat.
- GGCL - Gujarat Gas Company Ltd; Surat-Ankleshwar
- GAIL - Gas Authority of India Ltd; Vadodara
- GAEL - Gujrat Adani Energy Ltd; Ahmedabad

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- (1) When did India pass the Environment Act ?
(A) 1995 (B) 1981 (C) 1986 (D) 1974
- (2) Major sources of NO₂ and SO₂ pollutants.
(A) Vehicular exhaust (B) Fertilized factories
(C) Petroleum refineries (D) B and C both
- (3) From which method of following electric charge is generated on particles in the smoke ?
(A) Scrubbers (B) Electrostatic precipitator's
(C) Filters (D) All given
- (4) Size of particles to human health, suggested by CPCB
(A) 2.5 micrometer or less in diameter
(B) 2.5 micrometer or more in diameter
(C) 2.5 milileter or more in diameter
(D) 2.5 milimeter or less in diameter
- (5) To include noise as an air pollution, Indian government amended the Air act in which year ?
(A) 1981 (B) 1987 (C) 1995 (D) 2002
- (6) How much amount of CO increases in evening in city ?
(A) 1.8% (B) 2.0% (C) 18% (D) 20%
- (7) Company provides CNG to Ankleshwar -
(A) GAEL (B) GGCL (C) GAIL (D) GSRTC
- (8) Which one is not appropriate for CNG :
(A) odourless smoke
(B) more efficient
(C) can not be adulterated easily
(D) heavier than air so no chances of fire-catching
- (9) Which norm is newly added to register vehicles in Ahmedabad ?
(A) BHARAT - I (B) BHARAT - II (C) BHARAT - III (D) EURO - II
- (10) Photochemical smog is formed due to pollution of
(A) vehicles (B) cement factories (C) plastic factories (D) steel factories
- (11) GAIL provides CNG to
(A) Ahmedabad (B) Anklelshwar
(C) Surat (D) Rajkot
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- (12) What is 'Smog' ?
 (A) Smoke (B) Types of pollen
 (C) Radiation (D) Mixture of fog and smoke.
- (13) Which of the following is not carcinogenic ?
 (A) CNG (B) Smoke by combustion of Nicotin.
 (C) CO (D) All given
- (14) Recently CPCB researched that
 (A) particles of 2.5 micrometers or less in diameter cause premature death in human
 (B) noise of 150 db or high intensity disturb the peaceful life of human
 (C) India occupied 24 % area of biodiversity of total area of world
 (D) None of the above
- (15) Natural air pollutants are
 (A) smoke of vehicles, pollens, SPM
 (B) SPM, smoke from chimney, smoke spread during eruption of volcano
 (C) pollen of plants, smoke from chimney, vehicular smoke
 (D) pollen of plants, smoke spread during volcanic eruption, SPM
- (16) Air protection and control act has established in ?
 (A) 1990 (B) 1975 (C) 1981 (D) 1985
- (17) Scrubbers reduces which pollution ?
 (A) water (B) soil (C) air (D) radiative
- (18) Which gas can be removed through scrubbers ?
 (A) O₂ (B) CO₂ (C) SO₂ (D) NO₂
- (19) In Electrostatic precipitator's electric charge is generated on the particles of
 (A) soil (B) smoke
 (C) photochemical smog (D) precipitation
- (20) According to Gujarat Pollution Control Board, Gandhinagar has declared SPM in 2010-11.
 (A) 27.5 (B) 257 (C) 155 (D) 275

Answers : (1-C), (2-D), (3-B), (4-A), (5-B), (6-C), (7-B), (8-D), (9-C), (10-A), (11-A), (12-D), (13-A), (14-A), (15-D), (16-C), (17-C), (18-C), (19-B), (20-D)

Water pollution : When any undesirable substance mixes with water then water becomes contaminated and becomes unfit for use.

Water born disease : typhoid, hepatitis jaundice, cholera, diarrhoea, dysentery.

Law : The Water (Prevention and Control of Pollution) Act, 1974, India.

Domestic sewage as pollutant :

- It has bio-degradable organic matter.
- A mere 0.1% impurities make domestic sewage unfit for human use.
- **Bio-degradable organic matter** : They are readily decomposed by microorganisms from complex organic matter into simple organic and inorganic matter.

BOD (Biological Oxygen Demand)

- The measurement of amount of O_2 required for decomposition of biodegradable substances.
- Higher the bio-degradable matter, more O_2 utilise, more BOD.
- More BOD makes water unfit to drink.
- Drinking water has BOD value less than 1.
- BOD is measured by Oxymeter.

Eutrophication : Means easy availability of nutrients in an aquatic habitat.

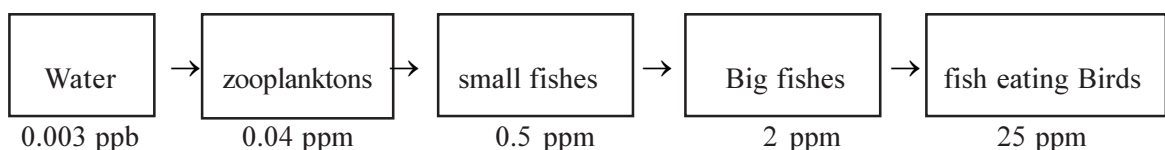
- That cause rapid growth in plants.
- Results in population-blast and pollute the water.
- **Cultural or Accelerated Eutrophications** : “Pollutants from man’s activities like effluents from industries and homes can accelerate the aging process called”
- **Source of pollutants** : sewage, fertilizers, animal excreta, detergents.
- That increases ammonia, nitrates, nitrites and phosphorous.
e.g. Water hyacinth *Eichhornia crassipes* (Terror of Bengal)

Side effect : Water body becomes shallow and finally converted into land.

Biological magnification :

- Means increasing concentration of some toxic substances at various trophic levels of a food chain of organisms.
- some toxic substance can not degrade (non-biodegradable). They are accumulated by an organism can not be metabolized or excreted and thus passed on to next higher trophic level.

eg : DDT (Dichloro Diphenyl Trichloro ethane)

**Waste water treatment :**

- Removes contaminants from waste water.
- It includes physical, chemical and biological process to remove such contaminants.
- Three phases :

Phase I : Large suspended substances are filtered out and made harmless and used as manure.

Phase II : Through bacterial activity organic waste is decomposed with airflow and water is chlorinated.

Phase III : Nitrates, phosphates are removed from this water and pure water is obtained.

‘Ecosan’ toilets (Ecological Sanitation) are used in Kerala and Srilanka, in which human excreta recycled into natural fertilizer.

- (21) To purify water reservoirs and maintenance Indian Government has passed which law ?
(A) The water (protection) act, 1986
(B) The water (prevention and control of pollution) act, 1974
(C) The water(prevention and control of pollution) act, 1981
(D) The water (prevention and purification) act, 1974
- (22) It decreases dissolved O_2 in water
(A) higher concentration of non-biodegradable materials
(B) lower concentration of biodegradable materials
(C) high proportion of biodegradable materials
(D) lower concentration of non-biodegradable materials
- (23) Decreasing O_2 in water, BOD.
(A) increases (B) somewhat decreases (C) no change (D) negligible
- (24) It is known as ‘terror of Bengal’.
(A) *Clarias genipius* (B) *Calotropis procera* (C) *Polyalthia longifolia* (D) *Eichornia crassipes*
- (25) Pollutants from man’s activities like effluents from industries and homes can accelerate the ageing process is called
(A) Cultural Eutrophication (B) Accelerated Eutrophication
(C) Inhibitory Eutrophication (D) A and B both
- (26) If in water reservoirs concentration of bio-non-degradable component is 0.003 ppb, then what will be the concentration in small fishes ?
(A) 25 ppm (B) 0.04 ppm (C) 0.5 ppm (D) 2 ppm
- (27) Which is correct option for activity done during second phase of waste water treatment ?
(A) Passes air flow
(B) Bacterial decomposition
(C) Chlorination of water
(D) All given
- (28) The higher accumulation of DDT found in
(A) phytoplanktons (B) eel (C) crab (D) birds
- (29) In sewage water, fishes die, because of
(A) more physical matters
(B) more silt enters the body along with water
(C) specific odour
(D) dissolved O_2 is lower
- (30) Drinking water sometimes passes through Chlorination because
(A) it lowers the salt amount (B) removes suspended particles
(C) kills micro organisms (D) increases O_2 concentration
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- (31) BOD value for drinking water should be
 (A) >1 (B) =1 (C) <1 (D) not certain
- (32) What will affect the BOD value if we add organic materials in water ?
 (A) no effect on BOD (B) no effect on COD
 (C) decrease in BOD (D) increase in BOD
- (33) Arrange them in ascending value of BOD
 (i) high polluted lake water
 (ii) non-polluted lake water
 (iii) distil water
 (A) i → ii → iii (B) ii → iii → i (C) iii → ii → i (D) i → iii → ii
- (34) Arrange them in increasing BOD value.
 (i) distil water
 (ii) tape water
 (iii) drainage debris in river water
 (A) i → ii → iii (B) ii → iii → i (C) iii → ii → i (D) i → iii → ii
- (35) Fish eating birds → large fishes → small fishes → zooplanktons → phytoplanktons
 (A) Eutrophication (B) Biological magnification
 (C) Aquatic food chain (D) Succession
- (36) Herbicides which are accumulate at different trophic levels of an ecosystem as a part of green revolution indicates
 (A) Biological magnification (B) Succession
 (C) Eutrophication (D) Organic farming
- (37) What is Eutrophication ?
 (A) 'Terror of Bengal,' Water Hyacinth destroys
 (B) Blue green algae destroys from aquatic habitat
 (C) Decrease in NH_3 , NO_3 , NO_2 , PO_4 in aquatic habitat
 (D) Easy availability of nutrients

Answers : (21-B), (22-C), (23-A), (24-D), (25-D), (26-C), (27-D), (28-D), (29-D), (30-C), (31-C), (32-D), (33-C), (34-A), (35-B), (36-A), (37-D)

***Solid Waste or Soil Pollution ***

- Commonly known as garbage that goes in trash.

Different types of wastes :

- (I) Biodegradable waste :** food, and kitchen waste, green waste, paper (Can also be recycled)
- (II) Recyclable material :** paper, glass, bottles, cans, metals, certain plastics
- (III) Inert waste :** construction and demolition waste, dirt, rocks, debris
- (IV) Composite waste :** Waste clothing, tetra packs, waste plastics (toys etc...)

Hazardous waste :

- hospital waste (Bio waste) (BMW-Bio Medical Waste)
- products of paints, chemicals
- e-waste (non-repairable electronics)

Recycling in developing countries involves manual participation thus exposing workers to toxic substances present in e-waste.

Use of plastic waste :

- Waste plastic can be mixed with polymers to build roads.
- Such plastics cleaned, shredded in small pieces, passing through 4.35 mm sieve, heated to 170°C in “Mini hot mix plant”.
- Then it gets softened and coated over the aggregate.
- At 160°C Bitumen is added and blend is formed at surface of aggregate.
- Then mixture is transferred to road.
- This technique is extended to “Central Mixing Plant” also.

Benefits of Polymer - Tar :

Stronger roads, no potholes formed, less bleeding during summer, reduces consumption of bitumin, not involve extra machinery.

Agrochemicals and their effects :

As a part of green revolution the use of herbicides, pesticides and fungicides has increased tremendously in order to get more production.

They accumulate and generate harmful effects on various trophic levels.

- causes bio-magnification in terrestrial ecosystem.
- think about organic farming.

Organic farming

- It excludes the use of manufactured fertilizers, pesticides, plant growth hormones etc.
- Ramesh Chandra Dagar, a farmer in Haryana is making use of organic farming.
- He developed ‘Haryana Kisan Welfare Club’ and introduced many techniques of bee harvesting, dairy management, water harvesting, composting and agriculture.

Radioactive waste :

- It is by-product of nuclear power generation, nuclear fission or nuclear technology.
- Radiation waste - Radiation - mutation in organism - Cancer.
- The first accidental event is leakage in Three Mile Island and Chernobyl incidents.
- It should be given pretreatment, shielded in containers buried within rocks, about 500 mt deep below the earth’s surface.

(38) Which is bio-degradable waste ?

(A) Green waste

(B) Cans

(C) Clothing waste

(D) Metals

- (39) What is the diameter of sieve through which plastic waste passed to make tar ?
 (A) 1.35 mm (B) 3.54 mm (C) 4.35 mm (D) 5.34 mm
- (40) Which is not suitable with polymer-waste-bitumen mix road ?
 (A) Less bleeding during summer.
 (B) Road strength is twice than normal roads.
 (C) No resistance towards water stagnation.
 (D) Not involve any extra machinery.
- (41) Biomagnification of agrochemical occurs in which ecosystem ?
 (A) Forest ecosystem (B) Pond ecosystem
 (C) A and B both (D) Terrestrial ecosystem
- (42) It is not included in organic farming.
 (A) Crop rotation (B) Plant growth hormones
 (C) Green manure (D) Bio-pest control
- (43) Who established "Haryana Kisan Welfare Club" ?
 (A) Ramesh Chandra Duble (B) E. Z. Pillai
 (C) Ramesh Chandra Dagar (D) Rajeshchandra Dagar
- (44) Which are the victims of incidents of nuclear energy ?
 (A) Bhopal (B) Three mile island (C) Chernobyl (D) B and C both
- (45) Global warming can be controlled by
 (A) increase in forest cutting, decrease in use of energy
 (B) decrease in forest cutting, decrease in use of fossil fuel
 (C) decrease in re-forestation, increase in use of fossil fuel
 (D) increase in forest cutting, decrease in human population

Answers : (38-A), (39-C), (40-C), (41-D), (42-B), (43-D), (44-D), (45-B)

Green house effects and Global warming :

- Sunlight passes through atmosphere and reaches the surface of the earth.
- The CO₂ absorbs long wavelength infrared rays and reflects them back towards the earth.
- That increases temperature of atmosphere is called Green House Effect.
- Another green house gases : Methane, Nitrous, Oxide : Hydrofluorocarbon (HFC)
Chloro-fluorocarbon (CFC)

Global Warming :

- The Earth's average temperature is around 15°C.
- By the year 2050 it can be reach upto 5°C more.
- Results of Global warming :
 - increase in temperature
 - melting of polar ice of Himalayan snow caps, result in rise in sea level that can submerged many coastal areas.

Precautions :

- reduce the use of fossil fuel
- alternative source of energy like natural gas, solar-energy, nuclear-energy, should be encouraged.
- reduction in deforestation
- promote plantation

Ozone depletion in stratosphere :

- Ozone column measures in Dobson Unit (DU).
- O_3 absorbs UV-rays and inhibit them to reach on the earth and protect us from its harmful effects.
- Main reason of O_3 depletion is sources of chlorine used as CFC and HFC in Refrigerators and Freon.
- $Cl + O_3 \rightarrow ClO + O_2$
 $ClO + ClO \rightarrow Cl_2 + O_2$
 $Cl_2 \rightarrow Cl + Cl \downarrow$
- Ozone depletion first observed in Antarctic Region
- Formation of a large area of thinned ozone layer is called the ozone hole.
- Depletion of 10% in ozone layer cause 26% increase in skin-cancer and cataract.
- High dose of UV causes inflammation of cornea, called snow -blindness.

- (46) Why it is not advisable to use CFC in cooling equipments (Refrigerators and A.C.) ?
(A) Swollen occurs on lungs (B) Deplete ozone layer
(C) More use of energy (D) Combines Cl_2 with CO_2
- (47) Chernobyl incident concern with
(A) Ozone hole (B) Nuclear power Generation
(C) Bio magnification (D) Eutrophication
- (48) Dobson Unit indicates measure of
(A) materials in bio-magnification (B) rate of ozone depletion
(C) thickness of ozone layer (D) to measure length of UV-rays
- (49) One atom of Cl_2 can decomposes molecules of O_3 .
(A) 10,000 (B) 1,00,000 (C) 10,00,000 (D) 1,000
- (50) Ozone depletion occurs in which layer of atmosphere ?
(A) Troposphere (B) Stratosphere (C) Mesosphere (D) Ionosphere
- (51) Atmospheric CO_2 absorbs this rays :
(A) IR of short wavelength (B) IR of long wavelength
(C) UV of short wavelength (D) UV of long wavelength
- (52) An average temperature of the earth is
(A) $27^\circ C$ (B) $28^\circ C$ (C) $15^\circ C$ (D) $37^\circ C$

- (53) Green house effect means :
- (A) atmospheric CO₂ does not allow long wavelength UV-rays so temperature of atmosphere remains hot.
- (B) atmospheric CO₂ absorbs long wavelength IR-rays and reflect them on the earth so temperature of the earth increases.
- (C) atmospheric CO₂ absorbs short wavelength UV-rays and reflect them on the earth, so temperature of the earth increases.
- (D) atmospheric CO₂ doesn't allow short wavelength IR-rays so temperature of the earth remains hot.
- 54) Which is commonly used in both refrigerators and A.C.
- (A) HFC (B) Freon (C) CFC (D) None of these

Answers : (46-B), (47-B), (48-C), (49-B), (50-B), (51-B), (52-C), (53-B), (54-B)

Degradation by improper resource utilization and maintenance :

- It is important that degradation of natural resources not only due to the action of pollutants but also due to improper resource utilization practices.

Soil erosion and desertification :

- Over cultivation, unrestricated grazing, deforestation and poor irrigation practicies are main causes.
- Such large patches extend and meet over a time, a desert is created.

Deforestation :

- At beginning of twentieth century, forest covered about 30% of the land of India.
- By end of century, it shrunk to 19.4 %.
- National Forest Policy (NFP), 1988 of India has recommended 33% forest cover for plains and 67% for hills.

Reasons :

- rapidly increasing population
- more land demand for agriculture
- use of timbers and fuel wood increases
- increasing industrialization and urbanization

Jhum cultivation : It is slash and burn agriculture.

- Farmers cut down the trees of forest and burn the plant remains.
- The ash is used as fertilizer and land is used for farming or cattle grazing.

Serious effects :

- atmospheric changes occur
- rainfall decreases
- increased soil erosion decreasing soil fertility
- amount of increasing CO₂, causing green house effect
- ecosystem balance is disturbed
- irregularities arise in bio-geochemical cycles.

Reforestation is the process of restoring forest.

*** People's participation in conservation of forest ***

- Seven billion inhabitants found in forest all over the world.
- 1.6 billion directly depend on forest for their livelihood.
- Declaration of state forests, national parks or wild-life reserves.
- The states in India have a strategy of "Joint Forest Management" (JFM)
- Forestry departments and communities jointly manage it.
- JFM originated from the management of Sal (*Shorea robusta*) forests in West Bengal.
- Sal forests increased from 11% to 20% in Midnapore district alone.
- Under JFM, the ownership of land remains with the government.

Study of three beneficial environmental issues :

- (I)
 - In 1931, Palace of Jodhpur, Rajasthan required timber wood from Forest.
 - Bishnois failed them to do so.
 - A Bishnoi woman Shri Amrita Devi laid down her life to save the trees.
 - Along with her 363 lay dead.
 - The Government of India has recently instituted the 'Amrita Devi Wildlife Protection Award.'
- (II) **Chipko Movement :**
- Initiated in 1974 in Uttar Pradesh, Garhwal Himalayas.
 - It spread to Himachal Pradesh, Karnataka, Rajasthan, Bihar, Vindhya.
 - Mrs. Indira Gandhi (Prime minister) given the leadership to Sunderlal Bahuguna, a Gandhian activist and philosopher.
- (III)
 - In 1980, the Government of India has introduced the concept of Joint Management Program (JFM), to protect and manage forests.

(55) What is responsible for destroy of fertile layer of soil ?

- (A) deforestation and weak irrigation
- (B) unrestricted grazing
- (C) more crop cultivation
- (D) all given

(56) According to National Forest Policy (NFP-1988) how many percentage the hills of forest should be expanded ?

- (A) 33%
- (B) 67%
- (C) 76%
- (D) 30%

- (57) Reason for deforestation :
 (A) increasing agriculture
 (B) increasing use of timber and fuel wood
 (C) increasing industrialization and urbanization
 (D) all given
- (58) Slush and burn cultivation means
 (A) harvesting (B) green manure (C) jhum cultivation (D) A and B both
- (59) Which idea gave origin of JFM ?
 (A) Sal management in Dhaka (B) Cutting of Sal trees in Assam
 (C) Sal management in West Bengal (D) Artificial forestation surrounding large cities
- (60) Who is owner of land as per JFM ?
 (A) Government (B) Village Management Association
 (C) Farmer (D) Sahkari Mandli
- (61) Which award is declared by Government of India for Wildlife conservation ?
 (A) Chipko Movement Wildlife Protection Award
 (B) Amritadevi Bishnoi Wildlife Protection Award
 (C) Amritadevi Bahuguna Wildlife Protection Award
 (D) Sundarlal Bishnoi Wildlife Protection Award
- (62) The leadership of Chipko-movement was given to
 (A) Sundarlal Bahuguna (B) Mrs. Indira Gandhi
 (C) Amritadevi Bishnoi (D) Shri Vinoba Bhave
- (63) Aim of Joint Management Programme is
 (A) involvement of people to conserve forests
 (B) forest products are available to people
 (C) manage the forests with communities
 (D) all given
- (64) Chipko- movement initiated in
 (A) 1947 (B) 1980 (C) 1974 (D) 1731
- (65) Jhum cultivation has harmful and beneficial effects both because
 (A) decreases food production, increases forest area
 (B) deforestation occurs, increases food production
 (C) deforestation occurs, only to develop medicinal plants
 (D) none of these

Answers : (55-D), (56-B), (57-D), (58-C), (59-C), (60-A), (61-B), (62-A), (63-D), (64-C), (65-B)

*** True - False type questions ***

- (66) The measures taken for global warming.
- (1) Alternative source of energy Natural gas should be increased.
 - (2) Solar-energy, geo-thermal energy utilization should be decreased so that Natural resources can be saved.
 - (3) Inhibit reforestation and encourage plantation
 - (4) Rapid increase in price of fossil fuel.
- (A) TFTF (B) TFFF (C) TTTF (D) TFTT
- (67) (1) Sound more than 150 db cause noise pollution.
- (2) Pollution can be decreased by use of unleaded petrol and diesel.
 - (3) 90% gaseous pollutants can remove through electrostatic precipitators.
 - (4) The Government of India introduced Joint Management programme to control environmental pollution.
- (A) TFTF (B) TTTF (C) TTTT (D) TTFF
- (68) Choose correct option for water pollution.
- (1) to clean water reservoirs, Indian Government introduced The water (purification and control of solution) Act, 1974.
 - (2) Chlorination of water is done in second phase of waste water management.
 - (3) Non-biodegradable components are bio magnified in food chain of aquatic habitat.
 - (4) Animal excreta, detergent when add to water causes exponential growth in aquatic plants.
- (A) FFTT (B) TFFT (C) TFFT (D) FTTT
- (69) Choose appropriate option for improper use of natural resources.
- (1) 100 years pass to form fertile layer of soil.
 - (2) So many issues generate due to marshy soil and high salinity in industrial revolution.
 - (3) 63% land area should occupy by forests.
 - (4) Reforestation is not possible in deforest area.
- (A) TTFF (B) TTFT (C) TFFF (D) TFFT

Answers : (66-B), (67-D), (68-A), (69-C)

A - Assertion R - Reason type MCQS

Read the assertion and reason carefully to mark the correct option out of the options given below :

- (70) Assertion A : Available area for natural ecosystem decreases.

Reason R : Human population increases.

- (A) (B) (C) (D)

- (71) Assertion A : Falcon and Pelicans are threaten due to bio magnification.
Reason R : To destroy mosquitoes DDT is spreaded in water.
(A) (B) (C) (D)
- (72) Assertion A : Forest cutting is one of the reason for global warming.
Reason R : Forest cutting increases green house gas CO₂.
(A) (B) (C) (D)
- (73) Assertion A : DDT shows bio magnification.
Reason R : UV rays cause ozone depletion.
(A) (B) (C) (D)
- (74) Assertion A : CNG is more beneficial than petrol and diesel.
Reason R : CNG is carcinogenic.
(A) (B) (C) (D)
- (75) Assertion A : Smoke is precipitated in electrostatic precipitators.
Reason R : 90% particles remove in electrostatic precipitators.
(A) (B) (C) (D)
- (76) Assertion A : BOD measurement decides fitness of water.
Reason R : BOD value of drinking water is always 1.
(A) (B) (C) (D)
- (77) Assertion A : Shorea robusta forests expand in Midnapur District.
Reason R : Management of forest with the help of communities under JFM.
(A) (B) (C) (D)
- (78) Assertion A : One atom of chlorine degrades 1,00,000 moleules of ozone and it returns back as chloride.
Reason R : Use of freon in refrigerator and AC should be banned
(A) (B) (C) (D)
- (79) Assertion A : Main reason for global warming is deforestation.
Reason R : Methane and CFC are also added to list of green house gases along with CO₂.
(A) (B) (C) (D)

Answers : (70-A), (71-A), (72-A), (73-B), (74-C), (75-D), (76-C), (77-A), (78-A), (79-B)

- | | | | | | | |
|------|-------------------------|-------------------------|----------|-----------|------------|-----------|
| (80) | Column- I | Column- II | I | II | III | IV |
| | (I) paper | (P) toxic waste | (A) Q | R | P | S |
| | (II) plastic waste | (Q) inert waste | (B) Q | P | R | S |
| | (III) spray cans | (R) recyclable material | (C) R | S | P | Q |
| | (IV) construction waste | (S) polymer tar | (D) R | P | S | Q |

(81)

Column- I	Column- II	I	II	III	IV
(I) Rajasthan-Jodhpur	(P) Chipko-movement	(A) S	P	R	Q
(II) Garhwal-Himalaya	(Q) Ozone depletion	(B) R	S	R	Q
(III) Midnapur	(R) Shorea robusta	(C) S	R	P	Q
(IV) Stratosphere	(S) Bishnoi community	(D) P	S	R	Q

(82)

Column- I	Column- II	I	II	III
(I) GAIL	(P) Vadodara	(A) P	S	R
(II) GGCL	(Q) Ankleshwar	(B) Q	R	S
(III) GAEL	(R) Ahmedabad	(C) P	Q	R
	(S) Rajkot	(D) Q	P	S

(83)

Column- I	Column- II	I	II	III	IV
(I) Water hyacinth	(P) Kerala	(A) R	P	Q	S
(II) Ecoson	(Q) Three mile island	(B) P	R	S	Q
(III) Shorea robusta	(R) Terror of Bengal	(C) S	Q	R	P
(IV) Radiation incident	(S) Natural resources	(D) R	P	S	Q

Answers : (80-C), (81-A), (82-A), (83-D)

Pollutants :

- Non-degradable pollutants : prohibited through laws, use alternative sources.
- Degradable pollutants :
- **Primary pollutants** : They are found in the forms in which form they are added. eg. DDT
- **Secondary pollutants** : They are formed due to chemical reactions between primary pollutants.
eg. photochemical smog, PAN
They are more toxic than primary pollutants.
(PAN : Peroxy Acetyl Nitrate)
- **Quantitative pollutants** : They are present in atmosphere, when their amount increases at maximum level, they act as pollutants.
eg: CO₂, N₂O
- **Qualitative pollutants** : They are not found in atmosphere. Human activities add them in environment.
eg. : fungicides, weedicides, DDT, etc.
- **Natural pollutants** : Natural resources like cattles, methane from paddy field, forest-fire etc.

- **Negative pollution** : Soil fertility is lost.
eg. over grazing, soil erosion, desirable matters are removed or absence makes loss of productivity of soil.
- **Positive pollution** : Undesirable matters are present at wrong places or adding of this matters, decreases soil fertility.
eg.: biofertilizer compensate the land. (Landfilling)
- **Point source pollution** : external source at definite places.
eg. exit of garbage of factories, drainage of Nagar-palika.
- **Primary pollutants** :
CO, 3-4 Benzopyrine, Benzene, Ethylene
NO, NO₂, SO₂, SO₃
- **Secondary pollutants** : Smog = Smoke + fog
 - Term given by Devoex,
 - Smog is measured by Ringalman technique.
 - (a) Losangeles smog or photochemical smog first observed in Los Angeles.
(PAN + O₃ + Nitrogen Oxide)- Brown Smog
 - (b) London Smog - Sulphar Smog
 - Coal, smoke, smog, sulphur oxide and low temperature is favourable.
 - H₂SO₄ is vaporised is called London fog.
 - Along with smog, vapour of H₂SO₄ is breathe in. As a result in 1952 4000 people died in London.
- **Acid-rain** :
 - H₂SO₄ + HNO₃ fall with rain water. (70% H₂SO₄ + 30% HNO₃)
 - Term was given by Robert August.
 - pH < 5.6
- **Green house gases** :
CO₂, CH₄, CFC, N₂O
 - CO₂ level increases from 280 ppm to 368 ppm during 1956 to 2002.
 - Upto 2020 CO₂ amount will be doubled.
- **Effect of CO₂ fertilization** :
 - Increase in CO₂ concentration also increases rate of photosynthesis (upto some years).
 - Response against increasing CO₂ concentration is called CO₂ fertilization effect.
 - Maximum concentration of Ozone is found in stratosphere (16 km to 25 km from earth's surface).
 - First Ozone hole was found in Antarctica by Satellite Nimbus -7
 - Ozone hole generate after August and before october in Antarctica.
 - During spring season mostly seen during February to April.
 - July-October show less.

To memorised :

- 5th June – World Environment Day
- 16th September – Ozone Day
- 22nd April – Earth Day
- 2nd December – National Environment Day
- 3rd December, 1984 – Bhopal gas tragedy
(Methyl I_{SO} Cynite)
- ODS – Ozone Depleting Substance
- Water-blooms – more nutrients in water
- Jetropa plants – to make bio-ethanol
- Green muphlar – to reduce noise-pollution plant shrubs and trees on two sides of roads
- Pyrolysis – burning of solid waste in absense of O_2
- Plume – Smoke releases from chimneys
- Anthracosis – disease caused by coal particles
- Syderosis – disease caused by iron particles

Disease caused by presense of excess metals.

- Arsenic – Black foot disease
- Mercury – Minamata
- Blue-baby syndrome – more amount of Nitrate in drinking water, that reduces O_2 carrying capacity called methamoglobinemia.
- Plumbism – Water polluted by lead
- Itai-Itai or Ouch-Ouch - bone-joint disease caused by cadmium.

Questions for NEET

- (84) Increase phospharus and nitrate fertilizer in water causes
(A) decrease in growth of algae (B) Eutrophication
(C) stability in growth of algae (D) Bio magnification
- (85) Air pollutants produce photochemical oxidants
(A) CO_2 , CO , SO_2
(B) Nitrous oxide, Nitric oxide, Nitric Acid
(C) O_2 , Cl^- , HNO_3
(D) O_3 , Cl^- , SO_2
- (86) Presence of E-coli in water indicates pollution of
(A) pollens of aquatic plants (B) light metals
(C) faecal matter (D) polluted water of industries
- (87) In 1984 Bhopal tragedy occured because methyl isocyanide reacted with
(A) DDT (B) NH_3 (C) CO (D) H_2O

- (88) Recently Govt of India has allowed mixing of alcohol in petrol what is the amount of alcohol permitted for mixing in petrol ?
 (A) 2.5% (B) 10-15% (C) 10% (D) 5%
- (89) Prolonged liberal irrigation of agriculture field is likely to create the problem of
 (A) acidity (B) aridity (C) Salinity (D) metal toxicity
- (90) Which of the following is not used for disinfection of drinking water.
 (A) chlorine (B) oxygen (C) phenyl (D) florine
- (91) Limit of BOD prescribed by Central pollution control board for discharge of industrial and municipal waste emptied into natural surface water is -
 (A) < 10 ppm (B) < 100 ppm (C) < 30 ppm (D) < 3.0 ppm
- (92) Photochemical smog pollution doesn't contain
 (A) nitrogen dioxide (B) Carbon dioxide
 (C) Oxygen (D) PAN (peroxy acetyl nitrate)
- (93) In which one of the following BOD (Biochemical Oxygen Demand) of sewage, distillery effluent, paper mill effluent and sugar mill effluent have been arranged in ascending order ?
 (A) SE < PE < S < DE (B) PE < S < SE < DE
 (C) S < DE < PE < SE (D) SE < S < PE < DE
- (94) In a coal fired power plant electrostatic precipitators are installed to control emission of
 (A) NO (B) SPM (C) CO (D) SO₂
- (95) Which one of the following is not a bioindicator of water pollution ?
 (A) Blood-worms (B) Stone flies (C) Sewage fungus (D) Sludge-worms
- (96) Montreal protocol aims at
 (A) biodiversity conservation (B) control of water pollution
 (C) control of CO₂ emission (D) reduction of ozone depleting substances
- (97) BOD in river water
 (A) not related with amount of O₂ in water (B) indicates presense of salmonela in water
 (C) when sewage adds to water, it increases (D) not affected by population-blast of algae
- (98) Which of the following plant species you would select for the production of bioethanol ?
 (A) Pongamia (B) Brassica (C) Zea mays (D) Jatropha
- (99) A renewable exhaustible natural resource is
 (A) coal (B) petroleum (C) minerals (D) forest
- (100) Chipko-movement initiated to conserve
 (A) wild animals (B) forests (C) cow (D) grasslands
- (101) 'World Environment Day' :
 (A) 5th June (B) 5th August (C) 5th September (D) 5th December

- (102) 'Ozone Day' :
 (A) 16th January (B) 16th May (C) 16th August (D) 16th September
- (103) "Green Muphlar" is called the pollution of
 (A) Air (B) Sound (C) Soil (D) Water
- (104) Gas produces in Paddy field, causes global warming is
 (A) Methane (B) Chlorine (C) H₂S (D) Nitrate
- (105) What does 'Water blooms' indicate in lake ?
 (A) Presence of more nutrients (B) Deficiency of nutrients
 (C) Deficiency of oxygen (D) Absence of aquatic insects
- (106) ODS means
 (A) Ozone Developing Substances (B) Ozone Depleting Substances
 (C) Ozone Doubling Substances (D) Ozone Deta Sources
- (107) In 'Green Muphlar', trees and shrubs can be planted at
 (A) unuseful land (B) on mountains
 (C) on road-divider (D) on both side of road

Answers : (84-B), (85-B), (86-C), (87-B), (88-D), (89-C), (90-A), (91-A), (92-B), (93-B), (94-B), (95-B), (96-D), (97-C), (98-D), (99-B), (100-A), (101-D), (102-B), (103-B), (104-A), (105-A), (106-B), (107-D)

