

Q 10 What are the function requirement of a good foundation? Draw the diagram of combined footing.

Ans 1. The basic requirement of any structure regarding its load resistance capacity is that the structure shall be constructed in such a way that the combine dead load, live load horizontal load like Earthquake & wind load can be resisted carried & transmitted to the ground safely without any structural damage, deflection.

2. Foundation should be taken sufficient in deep into the ground so that the structure is not affected by ground movement such as swelling, shrinking, squeezing. The landslide also should not affect the stability of the building.

3. Foundation should resist attack from chemical in soil. Groundwater & soil may contain different types of chemicals which are harmful to foundation concrete.

4. Foundation should be rigid so that the differential settlement are minimised, especially in a case where superimposed loads are not evenly distributed over the foundation.

(b) Explain green building with diagram?

Ans A green building is a building that, in its design, construction & operation, reduce & or eliminates negative impacts, and can create positive impacts on our climate & natural environment.

No. of feature which can make a building 'green'.

- Efficient use of energy, water & other resources.
- Use of renewable energy, such as solar energy.
- Pollution & waste reduction measures & the enabling of re-use & recycling.
- Good indoor environmental air quality.
- Use of materials that are non-toxic, ethical & sustainable.

Advantages :-

- ~~Energy-saving built in~~
- ~~Environmental sensitivity~~
- Reduced dependence on old growth lumber.
- Low maintenance & operation cost.
- ~~Water~~ Energy Efficiency
- Enhance Indoor Environment Quality.
- Reduce strain on Local Resources.

(c) Requirement of good brick earth ?

- Ans
- ① It must ~~we~~ have proper proportion of sand, silt & clay.
 - ② It must be homogeneous.
 - ③ It must be free from lumps of limbs or nodules of kankar.
 - ④ It should not be mixed with salty water.
 - ⑤ It should have sufficient plasticity (so that the bricks can be properly & conveniently moulded with sharp & well defined edges).

Explain the

(d) Requirement of good wood.

Ans

(e) Importance of civil & environmental engineering.

Ques Civil engineers design, construct, supervise, operate & maintain large construction projects & systems. Civil engineers create, improve & protect the environment in which we live.

Environmental engineers study the effects of technological advances on the environment. To do so, they ~~also~~ conduct studies on ~~haz~~ hazardous-waste management to evaluate the significance of such hazards, advise on treatment & containment and develop regulation to prevent mishaps.

(f) Explain Building component → Diagram.

Ans There are two basic component of building

① sub-structure → The part of building that is constructed below ground level.

② super-structure → The part of building that is above ground level.

① sub-structure :-
(a) footing

(b) Plinth

(a) footing → footing should be of such strength that it can easily carry the building load. Failure of footing leads to failure of building. Width & depth of footing should be designed according to the load of building coming on it plus the bearing capacity of soil.

(b) Plinth level → This layer stop the penetration of moisture to the super structure part of a building.

② super-structure :-

① Floor
④ Parapet
⑦ Doors & Windows

② Roof
⑤ Sundhdi

③ Lintel
⑥ Drip/corse

Floor separate the different level of building. Floor is that part of building on which furniture, household, commercial, any other type of item is stored.

Roof is made to cover rooms from upper face. Different type of roof used according to location. Sloping roof are generally considered better in mountain areas.

Lintel is constructed above doors, windows etc. to support load of wall on opening. Lintel beam is generally made as reinforced cement concrete.

External wall of building
is extended above the
roof slab in which is
known as parapet.

The purpose of parapet
is to retain water from its
entrance into the walls.

(i) Type of stairs cases :-

There are 7 type of stairs cases.

- (1) ~~Star~~ Straight stairs.
- (2) Straight stairs with central landing
- (3) L shaped stair
- (4) I shaped window stairs.
- (5) spiral stairs
- (6) Curved stairs
- (7) Library ladder

(ii) Type of stone masonry with sketch

stone masonry is made of stone units
bonded together with Mortar.

Stone Masonry

↓ Rubble Masonry

- (1) Random R.M
- (2) Square R.M
- (3) Polygon R.M
- (4) Flint R.M
- (5) Dry R.M

↓ Ashlar Masonry

- (1) Ashlar fine masonry
- (2) " rough tool'd.
- (3) Rock faced
- (4) Ashlar chamfered
- (5) Ashlar block in course

Environment Civil :-

PAGE NO.

DATE

Q.2 Discuss in brief, role of an individual in conservation of natural resources.

Ans.

Natural Resources :- Natural Resources are the part of humans in everyday life. Without Natural Resources humans would not survive.

Natural resources include air, water, soil, minerals, fuels, plants & animals.

(i) Individual role in water conservation.

- Monitor how much water you use with the help of water meter.
- Fix leaks, dripping taps & don't leave taps running
- Reuse water wherever possible, & use water efficient appliances.
- Capture rainwater

(ii) Conservation of forest :-

- Use non timber product
- Plant More trees
- Logging must be controlled
- Minimise the use of paper & fuel
- Avoid the construction of dam in forest areas
- Switch to digital books :

(iii) Soil conservation.

→ Grow different type plant.

PAGE NO.

DATE

→ In the irrigation process, using strong flow of water should be avoided.

→ Soil erosion can be prevented by sprinkling.

→ Crop rotation

→ Maintain soil pH.

→ No-till farming

→ In the irrigation process, using strong flow of water should be avoided.

→ Contour ploughing.

(iv) Individual role in conservation of Mineral.

→ Development of Non-conventional sources such as solar & Wind energy.

→ Development of substitutions: → Used plastic

→ Minimise the use of jewellery to conserve scarce minerals.

→ Buy durable products that last long.

→ Recycle & Reuse minerals & glasses.

(v) Individual role in energy conservation :-

→ Turning off lights, fans or other electric appliances when not in use.

→ Replacing tube light with CFL & LED.

→ Construct building in such a way that maximum amount of sunlight can be obtained.

→ Using solar cooker for cooking food.

Qb Explain in detail the various type of environmental issues in india & what are the law in india & Global-Environmental issues.

ans There are many environmental issues in India. Air pollution, water pollution, garbage & pollution of the natural environment are all challenges for India.

Major environment issues are forest & Agricultural degradation of land, resource depletion, public health, loss of biodiversity.

→ Population Growth :-

India's population growth add pressure to environmental issues & its resources.

The major sources of pollution in India india includes the rapid burning of fuelwood & biomass.

A growing population & exerts pressure on agricultural land, causing environmental degradation. & affecting the

The Environmental degradation ultimately reduce agricultural yield & food availability.

→ Water pollution :

The largest source of water pollution in India is untreated sewage. ~~The~~ Other sources of pollution include agricultural runoff & Unregulated small scale industry. Most of the river, lake & surface water in India is polluted. Domestic effluents & sewage also called water pollution.

→ Air pollution :-

Air pollution in India is a serious issue with the major sources being fuelwood & biomass burning. India has low per capita emission of greenhouse gases but the country as a whole is the third largest after China & US. Industries & traffic are the sources of air pollution in India.

→ Solid waste pollution →

The principle source of solid-waste are domestic, commercial & industrial & agricultural activities. Solid waste is that material which arises from various human activities & is normally discarded as unwanted. Some of solid waste are

- ① Garbage
- ② Rubbish
- ③ Pathological waste
- ④ Industrial waste
- ⑤ Agricultural waste.

Soil pollution :-

Entry of pollutants directly (releasing of effluents on land) or indirectly (use of polluted water as irrigation to crops) has been main reason of soil pollution.

Soil pollution refers to anything that causes contamination of soil & degrades the soil quality. It occurs due to pollutant which reduces the quality of soil.

→ Six laws →

- ① The Environment (Protection) Act ~~1986~~ 1986.
- ② The forest (conservation) Act 1980.
- ③ The Wildlife protection Act 1972.
- ④ Water (Preventing & Control) of pollution Act 1974.
- ⑤ Air () Act 1986.
- ⑥ The Indian forest Act, 1927 ✓

(d) What are the source of water & Explain what are the Indian standards.

(e) Explain eutrophication of lake.

Qc Discuss common impurities noticed in water & their removal.

ans Water is a universal solvent & in nature it is never totally pure. It is always have some chemical.

Impurities

- ① When water is flow from hills into plains it carries finely divided clay, sand, minerals.
- ② Presence of sulphate & chloride, bicarbonates of calcium make water hard.

Q7 (b) Explain nuclear waste & how are they managed with diagram?

Q8 Give an account of various global issues?

Q9 (a) Draw a block diagram indicating various waste water treatment units for a city & briefly discuss role of each unit?

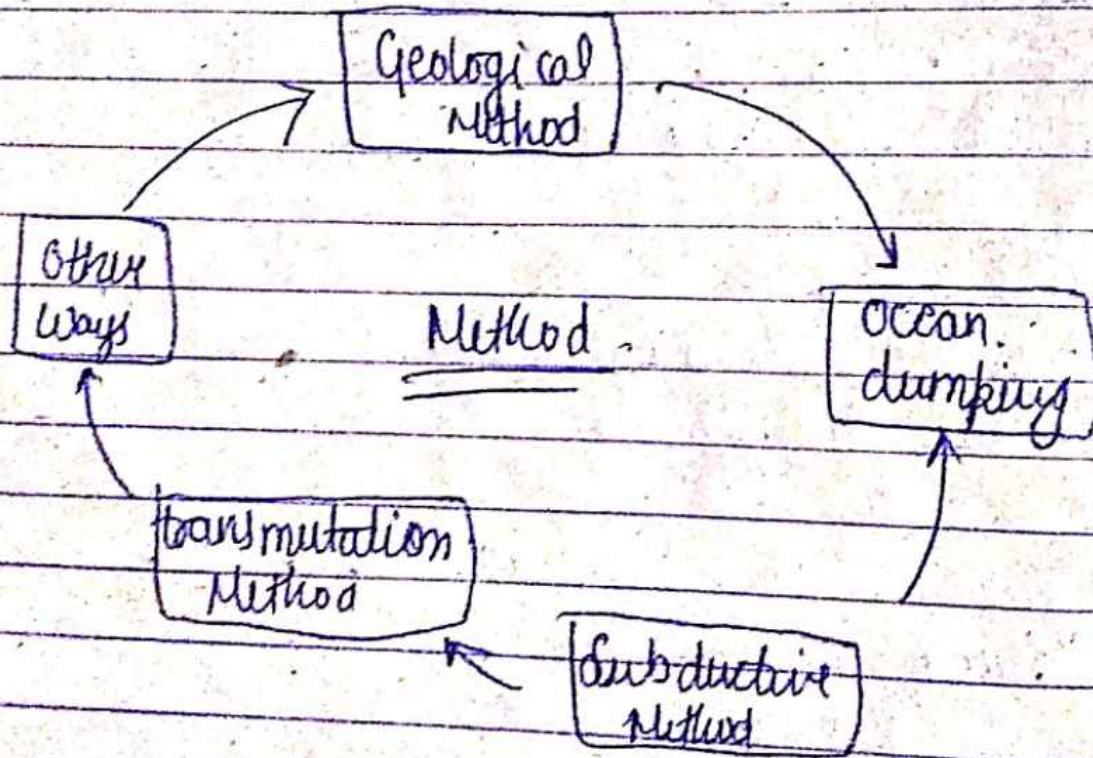
Q10 Give an account of various global environmental issues? type of sources of water with merit & demerit.

Q11 Discuss common impurities noticed in water & their removal? removal process diagram.

Q10 What do you understand by self-purification of streams, Explain the process with suitable sketch.

ans 7 Nuclear wastes are wastes that contain radioactive material. Nuclear wastes are usually by-products of nuclear power generation & other applications of nuclear fission or for nuclear technology.

Nuclear Waste Management.



(F) Subductive Waste :-

The subductive waste disposal method forms a high-level radioactive waste repository in a subducting plate, so that the waste will be carried beneath the Earth's crust where it will be diluted & dispersed through the mantle.

① Geological disposal :-

The process of geological disposal centers on burying nuclear waste into the ground to the point where it is out of human reach.

The waste is contained inside multiple barriers to provide protection over hundreds of thousands of years.

② Transmutation :-

Transmutation can offer another solution in addition to deep disposal.

Transmutation is a process in which the long-lived radioactive element in waste are converted by fission to shorter-lived particles that produce radiation for a much shorter period & are radiotoxic.

③ Ocean dumping

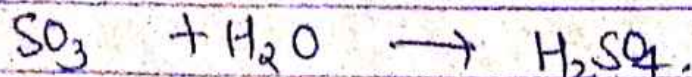
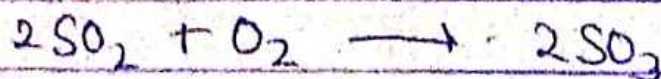
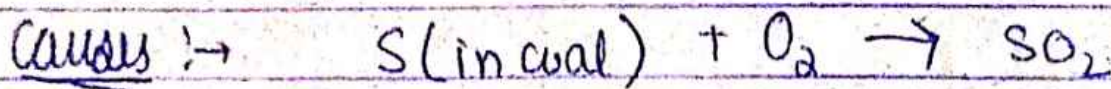
Although no high-level radioactive waste (HLW) has been disposed of into the sea, variable amounts of packaged low-level radioactive waste (LLW) have been dumped at more than 50 sites in northern part of Atlantic & Pacific Ocean.

Ques 8 Global environmental issues are

- ① Acid Rain
- ② Inversion
- ③ ~~Ozone depletion~~ Greenhouse Effect
- ④ Ozone depletion
- ⑤ Photochemical smog.

① Acid Rain :-

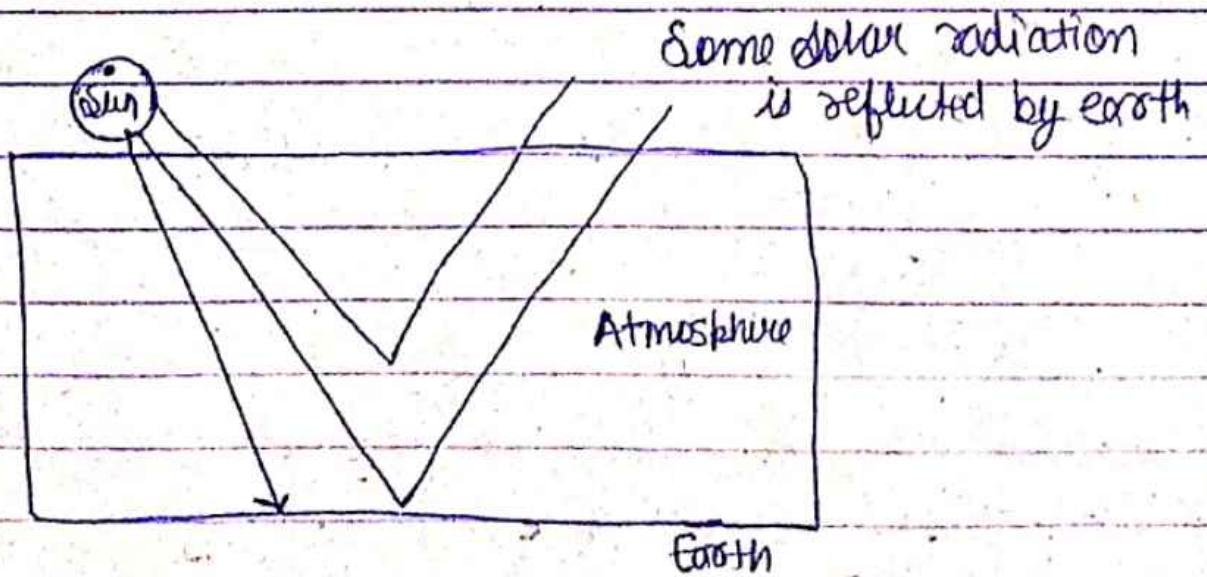
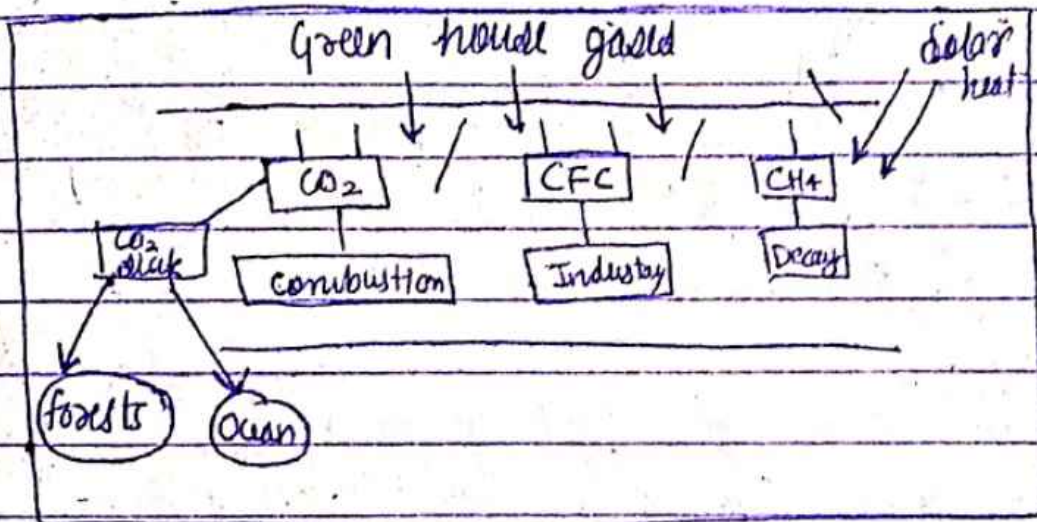
Rain water is considered as the purest form of water. When drops of water comes in contact with nitrogen oxides, sulphides, the pH value decreases and known as acid rain.



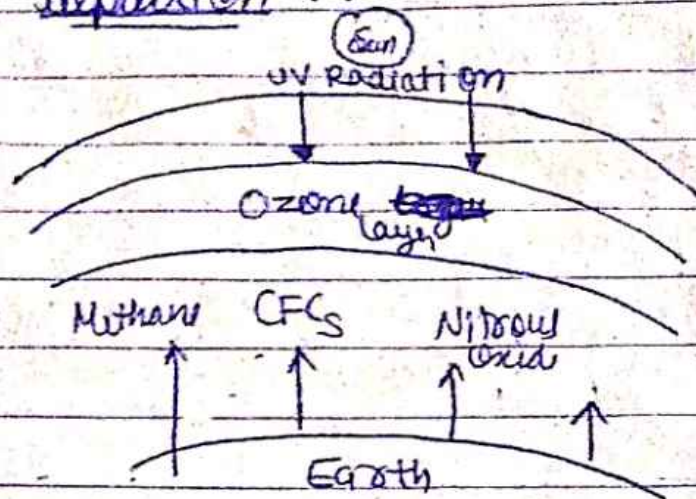
Inversion :-

Normally temp is higher at lower elevation, when temp is high at higher elevation. This causes accumulation & concentration of harmful chemicals at the ground level.

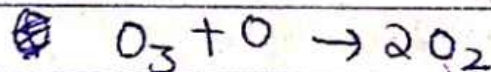
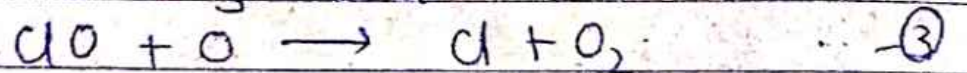
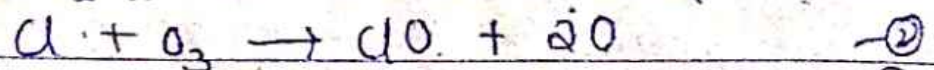
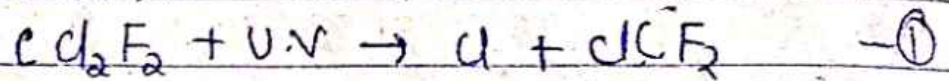
Green house Effect :-



④ Ozone depletion :-



cause of depletion :-



Chlorine from CFC molecules was capable of breaking down ozone

CFC is used in refrigeration system, air conditioners, fire extinguishers.

⑤ Photochemical Smog :-

Pollutants such as HC & NO_x in the presence of sunlight & ozone form different compounds such as formaldehyde, acrolein, etc. Formation of photochemical smog reduces visibility & damage plant & vegetable.

Classification of water

ans 9

Source of water

Subsurface water

1. Spring
2. Well
3. Tube well
4. Infiltration gallery

Surface water

- ① Lake
- ② Pond
- ③ River
- ④ Streams
- ⑤ Reservoirs

Quality of surface water & Under Ground water

Surface water

Advantage

1. Easy to abstract water
2. Water can be treated after use & put back into rivers
3. Dams & Reservoirs can be used for hydroelectric power
4. Reservoirs can be used for recreation

Disadvantage

1. Water will need treatment
2. Construction of expensive & environmentally damaging dam, may trigger earthquakes
3. Requires sufficient rainfall & large river catchment
4. Flooding of land for Reservoirs

Ground Water

Advantages

- ① Ground water generally does not get polluted easily.
- ② Since bore well is closed, no risk of getting contaminated.
- ③ Temperature of deep water remains stable. It feels cool in summer & warm in winter.
- ④ Since it is closed no danger of children & animal falling into it.

disadvantages

- Excessive pumping can lower the groundwater table.
- If ground water pollutants have long residence time.
- Sinking of land due to over pumping.
- It requires pumping or some arrangement to lift the water.

Impurities in Water →

- ① Suspended
- ② Colloidal
- ③ Dissolved

Suspended Impurities $\rightarrow$ These impurities are in the form of suspension/dispersion of solid particles which are removed by sedimentation & filtration. (suspension impurities include clay, algae, fungi).
Effect $\rightarrow$ Cause turbidity

Colloidal Impurities $\rightarrow$ These impurities are in the form of very fine divided dispersion of particle in water.
All colloidal impurities are electrically charged & repel one another & hence remain in continuous motion & do not settle.
Colloidal impurities present in water often impart associated with bacteria.

cause $\rightarrow$ (a) colour, taste & acidity, (b) produce harmful diseases germs.

Dissolved Impurities $\rightarrow$

These impurities may be in the form of solids, liquids or gas. This type of impurities may contain organic & inorganic compounds. The concentration of total dissolved ~~at~~ solid is usually expressed in mg/ppm.

Effect $\rightarrow$ (i) cause hardness & alkalinity
(ii) cause corrosion.

Diagram pdf in h

✓ Process & Impurities Removed :-

Process

Impurities ~~Removed~~ Removed

1. Screening

It is ~~also~~ adapted to remove floating matters. It is provided at the intake point.

2. Aeration

In Aeration, the principle of gas transfer is used. It removes objectionable taste, odour & dissolved gas like CO_2 & H_2S . Dissolved oxygen is

3. Filtration

Filtration is a process in which passing the water through bed filter made of bed of sand. It removes suspended colloidal, Reduces bacteria 90%.

4. Disinfection

Disinfection is a process of killing all the ~~pt~~ pathogens using some chemical dissolved in water. and make it safe for use.

5. Sedimentation

Sedimentation is a process of removal of suspended particles of impurities by gravitational settling. It also reduces the velocity of water to cause the settlement of suspended solids by gravity.

Ques The condition of excessive growth of plants both attached & planktonic in a water body is called eutrophication.

Eutrophication is a natural process of aging of a water body. It is a result of a very slow process of natural sedimentation of microscopic organisms.

The process of Eutrophication is propelled by increasing concentrations of nutrients necessary for biological activity.

A lake starts its life cycle as oligotrophic. In this condition since nutrients available are minimal, there is no significant biological activity in the water column that can support sedimentation.

With the introducing of nutrients as time progresses the lake collects a good amount of organic substances due to algae & other aquatic plant growth.

Eutrophication of lake is the excessive discharge of nutrients particularly phosphorus from anthropogenic sources. The process of over fertility leads to eutrophication.

The lake (water bodies) can be protected from Eutrophication only by preventing the sewage/waste water & specific, industrial wastes which are rich in phosphorus & nitrogen from entering the lake.

also When sewage is discharge into a natural body of water like streams, the receiving water get polluted due to waste products present in sewage.

The condition do not remain so for ever, because the natural force of purification such as dilution, sedimentation, oxidation, reduction in sunlight etc go on acting upon the pollution elements.

This automatic purification of polluted water, is due to course is called the self-purification phenomenon.