

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

SUBJECT CODE:CY1201

ENVIRONMENTAL SCIENCE&ENGG

TWO MARK QUESTIONS-ANSWERS

PREPARED BY

- 1. S.EMERALD SHIA (L/ECE)**
- 2. R.KALAIVANI (L/EEE)**
- 3. L.FREESIE GRETA (L/CSE)**

CY1201 - PRINCIPLES OF ENVIRONMENTAL SCIENCE AND ENGINEERING**2 MARKS****1. Define environment.**

'Environment' is derived from the French word *Environner* which means to encircle or surround. All the biological and non-biological things surrounding an organism are thus included in environment. Thus environment is sum total of water, air and land, inter-relationships among themselves and also with the human beings, other living organisms and property.

2. Write down the components of environment.

The components of environment can be broadly divided into two

1. Abiotic components - composed of all the non living components like temperature, water, minerals and gases etc
2. Biotic Components - composed of all the living components-plants, animals and micro-organisms.

The Abiotic components include: 1.Lithosphere 2. Hydrosphere 3. Atmosphere

The Biotic components include : 1, Producers 2. Consumers 3. Decomposers

3. Write notes on troposphere

This is the lowest layer of atmosphere. It extends up to 10-12km at mid latitudes, 5-6 km around poles and up to 18 km at equator. It contains water vapors, clouds and important gases like oxygen and nitrogen. The temperature in this region decreases at the rate of 5-7 degree centigrade per km.

4. Write notes on Stratosphere

This layer extends up to 50 km above the earths surface. This is a stable layer and it consists of dry air. The main chemical species of this region is ozone. It protects human beings from ultra violet radiation, which are emitted from the sun.

5. Write notes on Thermosphere

This layer exists up to 500km above the earth's surface. The heating of the thermosphere is due to the absorption of solar energy by atomic oxygen. With in this layer is the relatively dense band of the charged particles called ionosphere. Worldwide communication is done using this layer.

6. Why are plants called as producers?

The green plants have chlorophyll with the help of which they trap solar energy and change it into chemical energy of carbohydrates using simple

inorganic compounds namely water and carbondioxide.As the green plants manufacture their own food they are known as Autotrphs.

7, Write the classification of biological environment.

1. Floral/Plant Environment
2. Faunal /Animal Environment
3. Microbial environment

8. What is the structural features of ecosystem?

Composition and organization of biological communities and abiotic components constitute the structure of an ecosystem

i)Biotic structure:- The plants, animals and microorganisms present in the ecosystems form the biotic component.

ii)Abiotic structure:- The physical and chemical components of an ecosystem constitute its abiotic structure. It includes climatic factors, soil factors, geographical factors, energy, nutrients and toxic substances.

9. What is meant by biotic structure?

The plants, animals and microorganisms present in the ecosystems form the biotic component. It is classified in to, a) Producers, b) Consumers and c) Decomposers

10. What is meant by abiotic structure?

The physical and chemical components of an ecosystem constitute its abiotic structure. It includes climatic factors, soil factors, geographical factors, energy, nutrients and toxic substances. They are classified in to a)Physical factors and b)Chemical factors.

11.What are called Producers?

Producers are mainly the green plants, which can synthesize their food themselves by making use of CO₂ present in the air and water in the presence of sunlight by involving chlorophyll, through the process of photosynthesis. They are also known as photo autotrophs.

12. What are called consumers?

All organisms which get their organic food by feeding upon other organisms are called consumers. The consumers are of the following types,

- a)Herbivores
- b)Carnivores
- c)Omnivores
- d)Detritivores

13. What are called Decomposers?

They derive their nutrition by breaking down the complex organic molecules to simpler organic compounds and ultimately in to inorganic nutrients. Various bacteria and fungi are decomposers.

14. Define ecology.

Ecology is defined as the study of relationship between organisms and their environment.

15. Define Ecosystem.

An ecosystem is defined as a natural functional ecological unit comprising of living organisms and their non- living environment that interact to form a stable self-supporting system.

16 . Define energy flow in an ecosystem.

The flow of energy from one trophic level to next trophic level with in an ecosystem is called energy flow in an eco system.

17. Explain food chain

In food chain each organism eats the smaller organism and is eaten by the larger ones. All these organisms which are interlinked with each other through food together constitute a food chain.

16.What is meant by Grazing food chain?

It starts with green plants (primary producers) and culminates in carnivores.
Eg: Grass-grasshopper-Frog-Snake-Hawk.

17.What is meant by Detritus food chain?

It starts with dead organic matter which the detritivores and decomposers consume. Partially decomposed organic matter and even the decomposers are consumed by detritivores and their predators.

Eg:- Leaf litter-algae-crabs-small carnivores fish-large carnivorous fish
(Mangrove ecosystem)

Dead organic matter-fungi-bacteria.

18. Explain food web.

Various food chains are often interlinked at different trophic levels to form a complex interaction between different species from the point of view of food. This network is called the food web.

19. Define nutrient cycle/ Bio-geochemical cycle/ material cycle.

The cyclic exchange of nutrient material between the living organisms and their non-living environment is called nutrient cycle. As indicated by the name, the nutrients circulate through life (bio) and through earth (geo) repeatedly (cycle)

20. Name some of natural impacts on environment.

Some of the natural impacts are

1. Earthquake
2. Tsunamis
3. Flood
4. Volcanic eruption

21. Name some of the anthropogenic impacts on environment.

1. London Smog
2. Mediterranean a dead sea
3. Nuclear explosions
4. Minamata disease
5. Bhopal disaster
6. Chernobyl disaster
7. Gulf war hazards

22. State the theory of classical economics

Adam Smith and Thomas Malthus in 1700's developed the theory of classical economics, according to this view "as the population grows, the increasing scarcity of the finite resources the quality of life, increases competition and ultimately causes population to fall".

23. Define sustainable development

sustainable development can be summarized as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs.

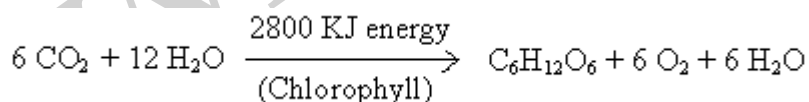
24. Explain the concept of sustainable development

The concept of sustainable development has the following underlying promises.

1. A symbiotic relationship between the consumer human race and the producer natural system.
2. Compatibility between ecology and economics.

25. Write short notes on photosynthesis.

The process by which chlorophyll bearing plants use energy from the sun to convert carbon dioxide and water into sugars is called photosynthesis. The generalized equation for photosynthesis is,



26. Define mole.

Mole is defined as the amount of substance present in a material. The term mole can be applied to any particle. In general it is the ratio between mass and molecular weight of a particle.

27. Define pH.

It is the logarithmic scale used to specify whether a solution is acidic, basic, or neutral.

28. Define molality.

Molality is defined as the number of moles of solute dissolved in 1000gm of the solvent. It is another common measurement of concentration

$$\text{Molality} = \text{Number of moles of solute}$$

Weight of solvent

29. Define Molarity.

Molarity is defined as the number of moles of the solute present in 1000ml of the solution.

$$\text{Molarity} = \frac{\text{Number of moles of solute}}{\text{Volume of solution}}$$

30. Define Hardness of Water.

Hardness of water is defined as the property of Water which consumes more soap to produce foam or lather. It is due to the presence of certain salts of calcium, magnesium and other heavy metals dissolved in it.

31. Differentiate between Temporary hardness and Permanent hardness

Temporary hardness is due to the presence of dissolved bicarbonates of calcium, magnesium and other heavy metals and the carbonates of iron. It is mostly destroyed by heating.

Permanent hardness is caused due to the presence of chlorides and sulphates of calcium, magnesium, iron and other metals. This is not destroyed by heating.

32. Define buffering capacity of water.

Buffering capacity is the ability of water to maintain a stable pH value even if acids or bases are added.

33. Define Turbidity.

Turbidity in water is a measure of the resistance of water to the passage of light through it.

34. Define permeability of soil,

It is defined as the ability of movement of water through the pore spaces of soil particles.

35. What are the principle nutrients required for algae.

- i) Nitrogen
- ii) Phosphorus
- iii) Carbon dioxide

36. List the properties of acid and base.

A solution for which the hydrogen ions are greater are than the hydroxyl ions, it is called as acid.

A solution for which the hydroxyl ions are greater than hydrogen ions, it is called as base.

37. Define Chemical oxygen Demand

This is defined as the amount of oxygen required for chemical oxidation of the organic matter and other reducing agents present in waste water.

38. List some physical properties of water.

Color
Temperature
Turbidity
Taste and odour.

39. Define Bio chemical oxygen demand.

BOD is defined as the quantity of dissolved oxygen required by bacteria for the oxidation of organic matter under aerobic conditions

40. What is an point source pollution.

Polluted water discharged from specific locations such as drain pipes, ditches, etc. are called point source pollution.

41. What is an non-point pollution ?

Water pollution caused in a scattered or diffuse manner having no specific origin or point of entry into a particular body of water are called non-point pollution sources.

42. List the different types of fresh water algae?

i) Green algae ii) Motile green algae iii) Blue green algae. iv) Brown algae.

43. Explain the basic classification of micro organism.

i) Bacteria ii) Fungi iii) Algae iv) Protozoa v) Viruses

44. What is an indicator organism?

The detection of pathogens in routine water analysis is difficult, uneconomical and impractical. Instead water is tested using a surrogate that is an indicator of fecal contamination.

Example: total coliforms, fecal streptococci and clostridium perfringens

45. Calculate the number of moles of CO₂ in 44 g of CO₂?

Number of moles = Mass / Molecular Mass
= 44 / 44
= 1 mole.

46. Calculate the pH of a solution with [H⁺]=3.4x10⁻⁴ mol/l

pH = - log₁₀[H⁺]
= - log₁₀(3.4) - log₁₀(10⁻⁴)
= - 0.534 + 4

$$= 3.47$$

47. What is a policy?

A policy is a plan or statement of intent –either written or stated – about a course of action or inaction intended to achieve certain goals.

48. Write the pH of i)Human blood ii)Lemon juice iii)Wine iv)Distilled water

Human blood	: 7.5
Lemon juice	: - 2
Wine	: - 4
Distilled water	: 7

49. What is an saturated solution?

This is a solution, which contains as much solute as it can dissolve in the presence of solvent at a given temperature.

50. Name all the mass/mass units used for representing concentration of solution?

- i)percent by weight
- ii)parts per million
- iii)molality
- iv)mole fraction

51. What is meant by air pollution?

Air pollution may be defined as the presence of impurities in excessive quantity and duration to cause adverse effects on plants, animals, human beings and materials.

52. What are the main sources of air pollution?

- Natural sources and
- Man made or anthropogenic sources

53. List the types of air pollutants.

- Particulate pollutants
- Gaseous pollutants

54. What do you understand by suspended particulate?

Suspended particulate matter is a complex mixture of small and large particles with size less than 100μ varying origin and chemical composition. The largest source of particulate matter is coal-fired power plants, but auto and diesel exhaust are also prime contributors, especially along busy transportation corridors.

55. Write short note on color-coding of biomedical waste.

In order to dispose the biomedical waste safely and economically it is necessary to collect the waste by suitable segregation. The system of using different color bags to collect different types of medical waste is known as color-coding. The biomedical waste can be divided into 3 categories according to the colors,

Yellow bag waste - Eg: Human anatomical waste-Should be incinerated or deeply buried
 Red bag waste - Eg: Plastic waste-Should be disinfected with chemicals

Black bag waste - Eg: Incinerated ash-Should be disposed for landfills.

56. How can exhaust reduction be done in vehicles?

The exhaust deduction in the vehicle may be achieved to some extent by adopting the following technique.

- Catalytic converters
- Manifold air injection
- Fundamental engine modification

57. Write short note on radioactive property of hazardous waste.

In the spontaneous break down of the nucleus of an atom, mainly three types of radioactive materials are found to be hazardous namely:

α particles, β particles, γ radiations.

The α particle emission occurs mainly in radioactive isotope and the β radiations are the electron released from a radioactive nucleus. The γ radiations are electromagnetic radiation traveling at speed of light.

58. How can you control the emission of nitrogen oxides? OR Explain EGR method.

Since high temperature favors the production of nitrogen oxide, the emission may be controlled by lowering the combustion temperature. This can be achieved by re-circulating the exhaust gases, which will no longer burn. Hence it will not produce any heat if re-circulated and will quench the heat of the combustion gases. This method is called Exhaust Gas Recirculation(EGR). The temperature in the cylinder ranges from 500°C and the end of compression stroke (before ignition) to about 3000-°C after ignition, which produces nitrogen oxides. Hence to reduce the formation of nitrogen oxides the temperature must be maintained as low as 1300 °C which can be maintained by adopting EGR method.

59. What are the sources of hydrogen fluoride?

Hydrogen Fluoride is released by aluminium industry, chemical industries, textile and fertilizer industries. HF affects the respiratory track, bone fluorosis, skin burns, and destroys the crops.

60. Write short note on incineration process used in managing hazardous waste.

The incineration process is very complex and involves chemistry, physics and thermodynamics. During this process, the bonds between the molecules break and free radicals are formed leading to violent reactions, and finally to harmless products. Some reactions are also speeded up by catalysts at high temperature.

61. What is landscape diversity?

Landscape diversity involves more than just the spatial arrangement of habitats across a large area but also includes the flux of energy, nutrients, disturbances and organisms across the area.

62. What are the main components of municipal solid waste?

- Garbage (or) food waste
- Rubbish
- Ashes and Residues
- Special wastes
- Construction and demolition wastes
- Treatment plant waste

63. Define green house effect.

The green house effect is a naturally occurring process that makes the earth warmer by trapping more energy in the atmosphere. The green house gases absorb and hold heat from the sun, preventing it from escaping back into the space.

64. Define global warming

Global warming is defined as the increase in temperature of the earth, which causes more changes in climate.

65. What are the effects of global warming?

- More heat waves
- Expansion of desert area
- Natural fires in forest land
- More evaporation of water from oceans and water bodies
- Melting of ice caps in arctic and Antarctica regions
- More cloud formation in the atmosphere
- Rise in sea level
- More drought
- More impacts on plants, animals and humans.

66. Define screening and skimming.

The process of removing the large matters from sewage by allowing it to pass through screens is called screening.

The process of removal of floating matters such as oils, grease, etc by skimming tanks is called as skimming.

67. Name any three disinfection method

- Chlorination, Ozonation, UV treatment

68. What are the types of autoclave systems used in treatment of biomedical waste?

- Gravity system

Pre vacuum system
Retort type systems

69. When is a waste said to be hazardous?

A waste is said to be hazardous if it posses one or the more of the following characteristics

Toxicity
Reactivity
Ignitability
Radioactivity
Corrosivity

70. What are major vehicle pollutants?

The major pollutants due to vehicles are

Carbon monoxide
Hydrocarbons
Oxides of nitrogen
Lead components and
Suspended particulate matter.

71. Write short note on nitrification / denitrification

An approach to nitrogen control utilizes aerobic bacteria to convert ammonia(NH_4^+) to (NO_2^-) which is nitrification followed by an anaerobic stage in which different bacteria converts nitrates to nitrogen gas(N_2) which is denitrification. The overall process is referred to as nitrification / denitrification.

72. Explain drying and dewatering.

The shredded waste material is pre-dried to decrease its weight by removing the amount of moisture. If there is any need for incineration of sludge from treatment plants, then dewatering is essential.

73. What are the two main classifications in sources of radioactive pollution?

Natural sources
Man-made sources

74. What is half-life of a radioactive substance?

The half-life of a radioactive substance is defined as the time taken for decaying half of the material present.

75. What are the factors to which the effect of radioactive pollutants depend on?

Duration of exposure to the radiation
Strength of the radiation
Half life period of the radioactive pollutant
Rate of diffusion of the pollutant
Environmental conditions

76. What is DRE?

DRE refers to the destruction and removal efficiency that evaluates the measurement of qualitative functioning of an incinerator. A DRE value of 99.99 indicates that one molecule of an organic compound is released in to the atmosphere for every 10,000 molecules of pollutant treated by the incinerator.

77. What is flow diagram and what are its advantages?

Flow diagram is a graphical representation of various processes involved in various methods of treatment plant. The advantages are

- i) It shows the sequential processes involved in a particular type of treatment method.
- ii) Easy to understand and can easily identify if anything goes wrong.

78. What are the objectives of waste minimisation?

- i) Reduced hazard to human health from the generation of toxic wastes.
- ii) Preventing environmental degradation caused by unnecessary release of waste materials.
- iii) Reduced the waste disposal and its cost reduction.

79. What are the factors involved in the amount of waste generation process?

- i) House keeping practices
- ii) Extent of process control.
- iii) Product quality requirements and initiative.
- iv) Managing system and initiative.

80. What is the aim of national committee of environmental planning and co-ordination.

- i) Conservation of natural resources.
- ii) Control of environmental pollution.
- iii) Environmental education.
- iv) Environmental laws.

81. What is waste treatment?

Waste treatment technique or process change the physical, chemical and biological character of waste.

82. What are the objectives of waste treatment?

- i) To recover the material or energy resources from the waste.
- ii) To neutralise the waste.
- iii) To reduce the volume of waste.

83. What is an clean technology?

Clean technology is an integrated preventive environmental and business strategy which uses fewer raw materials, less energy and generate less waste than an existing

technology. It produces products and provide services at a higher efficiency ,increased profitability and reduces risk to the environment.

84. What are the advantages of clean technology?

- i)It helps to use fewer raw materials and energy and generate less waste.
- ii)It helps to ensure worker safety.
- iii)It reduce the impacts for products along the entire life cycle from material extraction to disposal.

85. What are the steps to be taken to implement cleaner production in an industry.

- i)Undertake environment review and create the awareness of environmental issues.
- ii)Establish environmental policy duly acknowledged by the executive officer.
- iii) Carry out environmental audit on suppliers of services.

86. What do u mean by end of pipe approach?

In this case waste treatment is done at the end of pipe (ie) after the manufacturing process is over. Steps are taken to minimise the waste during the manufacturing processes and also the generated wastes are not reused. Therefore ,the waste treatment alone is called End of Pipe approach.

87. What is environmental waste audit?

The most important process, which reveals the actual generation of waste in an industrial unit, is the waste audit.

88. What are the important points of good waste audit?

- i) Help set targets for waste reduction.
- ii) Increase knowledge of the production process.
- iii)Help to improve process efficiency.

89. How the waste audit is divided?

- a) Pre assessment
- b) Material balance
- c) Synthesis.

90. What is disposal?

Disposal is the discharge, deposit, injection, dumping, spilling, leaking or placing of waste in to or any land, water or air.

91. What is standard of performance?

The minimum allowable concentration of each chemical agent in a waste water or effluent that is prepared by suitable acts or amendments is called standard performance.

92. What is the objective role of standards of performance in the control of pollution?

The standards of performance function to monitor and assess the overall concentration of toxic pollutants in the effluent and enable the analyst or investigators to check whether the prescribed limit of those pollutants do not exceed the allowable level.

93. Mention the standards of a few chemical parameters in the oil refinery industry.

1. Phenol	0.7 kg/1000 tones of crude processed
2. Sulphide	0.35 kg/1000 tones of crude processed
3. BOD at 20 ⁰ c	10.5 kg/1000 tones of crude processed
4. Suspended solids	14 kg/1000 tones of crude processed

94. Mention the standards of a few chemical parameters in the cotton textile industry

1. pH	5.5 to 9.0
2. Suspended solids	100 mg/lit
3. BOD at 20 ⁰ c	150 mg/lit
4. Sulphides	2.0 mg/lit
5. Total chromium content	2.0 mg/lit

95. What is the percentage removal of suspended solids and BOD in primary treatment?

The primary treatment is aimed to remove 60% of suspended solids and 40% of BOD.

96. What are the elements of waste minimisation strategy?

- a. Reduction at source
- b. Recycle/Reuse
- c. Treatment
- d. Disposal.

97. What are the possible solutions of waste disposal?

- i) Install a fume incinerator.
- ii) Install a condenser to recover the solvent for reuse

98. What is MINAS?

Effluent standards were designed on techno economic grounds called the 'Minimal National Standards'

99. What is LSS?

Effluent standards are calculated on the basis of the assimilative capacity of the receiving environment, called the 'Location Specific Standard'

100. What are the operations included in ETP?

- The operations included in ETP (effluent Treatment Plants) are
- i) Blending
 - ii) Equalization
 - iii) Neutralization
 - iv) Precipitation
 - v) Chemical or Biological Oxidation

101. Define Environmental Impact Assessment.

Environmental Impact Assessment (EIA) can be defined as the systematic identification and evaluation of the potential impacts (effects) of proposed projects, plans, programs, or legislative actions relative to the physical-chemical, biological, cultural, and socioeconomic components of the total environment.

102. Write down the objective of EIA:

The objective of Environmental Impact Assessment (EIA) is to ensure that environmental aspects are addressed and potential problems are foreseen at the appropriate stage of project design. EIA should be envisaged as an integral part of the planning process and initiated at the project level from the start.

103. What is the need of EIA?

All the developmental activities are proposed to facilitate the public. For that the resources are used more and that may alter and affect the environmental parameters. Hence this EIA is carried out in order to ensure the depletion of resources and the alterations and effects on the quality of environmental parameters.

104. What are the goals of EIA?

The goals of EIA are:

- Conservation of resources.
- Minimization of wastes.
- Recovery of by-products.
- Utilization of efficient equipments.

105. List the key elements of EIA.

- Organizing the job.
- Assessment performance.
- Preparation of Environmental Impact Statement.
- Reviewing of Environmental Impact Statement.
- Approval of Plan with or without modifications.

106. Define Environmental Impact Statement (EIS)

An Environmental Impact Statement (EIS) is a detailed written statement which serves as an action-forcing device, provides full and fair discussion of

significant environmental impacts and must inform the decision makers and public the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of human environment.

107. Write down the types of EIA:

There are two types of EIA.

- i. Rapid EIA
- ii. Comprehensive EIA

Rapid EIA is done quickly based on one season data whereas Comprehensive EIA will be detail and normally takes at least one year for its preparation.

108. Write down some of the benefits of EIA:

The benefits of the EIA are,

- i. Reduce cost and time of project implementation
- ii. Increase project acceptance and improve project performance.
- iii. Avoid impacts and violations of laws and legislations.
- iv. Improved human health and maintenance of biodiversity.
- v. Decreased resource use and fewer conflicts over natural resource use.

109. Write down the major objectives of ISO 14000 series:

The major objectives of ISO 14000 series is to promote more effective and efficient environmental management in organization and to provide useful and usable tools-ones that are cost-effective, system based, flexible and reflect the best organizational practices available for gathering, interoreting and communicating environmentally relevant information. The intended end result is the improvement of environmental performance.

110. Write down the subjects covered under various ISO 14000 :

ISO 14000 – 14009 : Environmental Management Systems
 ISO 14010 – 14019 : Environmental Audit
 ISO 14020 – 14029 : Environmental Labeling
 ISO 14030 – 14039 : Environmental Performance Evaluation
 ISO 14040 – 14049 : Life Cycle Assessment
 ISO 14050 – 14059 : Terms and Definitions
 ISO 14060 : Environmental Aspects in Product Stand

111. Write down the key requirements specified under ISO 14000:

The key requirements specified under ISO 14000 are,

- vi. Environment access
- vii. Planning
- viii. Implementation and operation

- ix. Checking and corrective action
- x. Management review

112. Write notes on Precautionary Principle:

The precautionary principle emphasizes that we should plan a margin of safety for error or surprises in natural systems. In other words, when human health or the environment are threatened, precautionary measures should be taken even if cause-and-effect relationships are not fully established scientifically.

113. What is the beneficiary pays principle?

According to this principle, 'the people who get benefited due to an activity, which increases the pollution, should pay for that'.

114. What do you know about risk management?

Risk management is a process of resolving various policies regarding acceptable risk. It consists of risk assessment and risk control.

115. Define risk assessment?

Risk management is defined as the process of identifying, quantifying and evaluating the risk. . It contains risk determination and risk evaluation.

116. What are the activities covered in risk assessment?

- Risk identification.
- Risk estimation.
- Risk acceptance.
- Risk aversion.

117. Write notes on Polluter Pays Principle:

The basic environment law of the land requires that a polluter bear the remedial or clean-up costs as well as the amount payable to compensate the victims of pollution. This is known as the 'polluter pays principle'. The principle becomes effective with Environmental Law.

118. What are the limitations of Polluter-Pays Principle?

1. The polluter pay taxes would be used to enrich government funds, not to compensate those who were harmed by the pollution.
2. The pollution control boards are in no position to assess the actual costs imposed by pollution. Pollution taxes enacted through the political process are likely to reflect political priorities rather than environmental ones

119. Compare and contrast polluter pays principle with beneficiary pays principle.

In case of the polluter pays principle, the polluter is responsible and he should pay for his action. Whereas, in case of the beneficiary pays principle, the benefited persons should pay for enjoying a clean and safe environment. There is no need to pay by the polluters according to this principle.

120. Write down the components of Environmental Law:

Environmental Law includes official rules, decisions and actions concerning environmental quality, natural resources and ecological sustainability.

121. What are the major constitutional provisions in India for environmental protection?

- Article 47.
- Article 48-A.
- Article 51-A (g).
- Article 253.

122. State the Article-47 of the Indian Constitution.

Article 47 of the Constitution states that, "The State is to ensure as its primary duty of,

1. Raising standard of living of its people,
2. To increase the level of nutrition of the people,
3. To bring improvement in public health".

123. State the Article 48-A of the Indian Constitution.

Article 48-A of the Constitution states that, "the State shall endeavor for protection and improvement of the environment and for safeguarding the forest and wild life and improving the natural environment of the country".

124. State the Article 51-A(g) of the Indian Constitution.

According to Article 51-A(g) of the Constitution, it shall be the duty of every citizen of India 'to protect and improve the natural environment including forests, lakes, rivers, and wild life and to have compassion for living creatures'.

125. State the Article 253 of the Indian Constitution.

Article 253 of the Constitution empowers the parliament to make laws regarding preserving the environment. It states 'The parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference, association or other body'.

126. List the major environmental conventions of 20th century.

1. World summit on sustainable development
2. The Earth Summit
3. World conference on women.

127. Name some of the acts enacted by the Indian Government to protect the environment.

- 1.The Water (prevention and control of pollution) Act 1974
- 2.The Water (prevention and control of pollution) Cess Act 1977
- 3.The Air (prevention and control of pollution) Act 1981
- 4.The Environment (protection) Act 1986
- 5.The Public Liability Insurance Act 1991.

128. What are the common objectives of environmental legislation?

All the Acts were enacted to achieve the following:

- 1.To control further damage to the environment and ecosystem
- 2.To conserve the environment
- 3.To restore the environment in areas damaged including such measures as reclamation of degraded land.
- 4.To create authorities to administer the policy and contents of the legislation.
- 5.To provide penalties and prosecution for violation of laws.

129. List the major environmental protocols of 20th century.

- 1.Kyoto protocol
- 2.Montreal protocol.

130. Write notes on NGOs:

The groups working for social changes are called Non-Governmental Organizations (NGOs). When the activities are concerned with environmental issues they are called environmental NGOs.

131. Write notes on 'Green Peace':

'Green peace' is one of the largest NGOs in the world with 1.6 million contributing members, carries out well-publicised confrontations with toxic waste dumpers, seal hunters and others who threaten very specific and visible resources.

132. List some of the NGOs available in India.

- 1.World Wide Fund for Nature India.
- 2.Indian Environmental Association, Mumbai.
- 3.Environmental Society of India (ESI), Chandigarh.
- 4.Sastrakalayatha, Kerala.
- 5.C.P.Ramaswami Ayer Environmental Education Centre.
- 6.Centre for Environmental Education, Ahmedabad.
- 7.Friends of River Narmada.
- 8.Madras Environmental Society, Chennai.
- 9.Eklavya, Madhya Pradesh.
- 10.SEARCH, Bangalore.

133. How does the community participation involve in protecting the environment?

Community participation requires involvement in several areas:

1. Better theoretical knowledge about the environmental information (both Scientific and traditional)
2. Better practical guidelines and tools are need.
3. Better educational support.
4. Ethical inconsistencies in environmental decision-making are illuminated and kept to a minimum.

134. Write short notes on the history of implementation of international treaties and conventions.

Over the past 25 years, more than 170 treaties and conventions have been negotiated to protect our global environment. These are mainly designed to regulate the following activities:

3. Intercontinental shipping of hazardous waste
4. Reforestation
5. Over-fishing
6. Trade in endangered species
7. Global warming and
8. Wildlife protection.

135. Mention the standards in EPR:

There are three types of standards mentioned in Environment Protection Rules (EPR),

- a. *Source standards*, which require the polluter to restrict the emission and discharge of environmental pollutants at source.
- b. *Product standards*, which fix the pollution norms for new manufactured products such as car.
- c. *Ambient standards*, to set maximum pollutant loads in the air and to guide regulation on the environmental quality that ought to be maintained for healthy living.

136. Write notes on environmental law in ancient period in India:

Production, conservation and judicious use of natural resources were the ancient approach. It was Dharma of each individual in the society to protect the natural resources. People worshipped the objects of nature. The trees, the water, the land and the animals gains important position in the ancient time.

137. Write down the purpose of The Water (Prevention and Control of Pollution) Act, 1974.

The purpose of The Water Act is “to provide for the prevention and control of water pollution and the maintenance or restoring wholesomeness of water for the establishment, with a view to and carrying out the purpose of aforesaid of Boards for the prevention and control of water pollution, for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith”.

138. According to The Air (Prevention and Control of Pollution) Act, 1981 define air pollutant:

The Air Act was passed for the “prevention, control and abatement of air pollution”. This law defined an air pollutant as “any solid, liquid or gaseous substance present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment”.

139. Mention some important features of Environmental (Protection) Act, 1986:

Some important features of the Environmental (Protection) Act, 1986 are

9. Regulating the handling of hazardous substances
10. Has power to order the closure of the non co-operative industry.
11. Take all necessary steps to protect and improve the quality of environment.

140. Write notes on Manufacture, Storage and Import of Hazardous chemical Rules, 1989.

These rules are applicable to three different types of flammable substances and about 450 hazardous chemicals. The importers of hazardous chemicals should inform the Board authorities of the below given details within 30 days,

12. The place of entry in India
13. The name of address of the importer
14. Mode of transport
15. The quality of the chemicals and
16. The safety details of the product.

16 MARKS

1) Explain in detail about the components of environment?(16)

- Hydrosphere (6)
- Atmosphere (5)
- Lithosphere (5)

2) Explain in detail sustainable development? (16)

- Definition (2)
- Diagram (4)
- Agenda (5)
- Example (5)

3) Explain Nitrogen ,Sulphur, Carbon cycles? (16)

Nitrogen cycle

- Diagram(3)
- Theory (3)

Sulphur cycle

- Diagram(3)

Theory (2)

Carbon cycle

Diagram(3)

Theory (2)

4) i) Explain in detail about the man made impacts on water, air, land? (16)

ii) Explain about a) London smog b) Bhopal gas tragedy

i) Man made impacts on Water (4)

Man made impacts on Air (4)

Man made impacts on Land (4)

ii) London smog (2)

Bhopal gas tragedy (2)

5) Explain the concept of sustainable development with necessary examples. (16)

Ecological economics(4)

Concept of sustainable Development (6)

Example(6)

6) Describe in detail about EIA and EIS.

Environmental Impact Assessment (EIA)

- definition
- objective
- types
- EIA report

Environmental Impact Statement (EIS)

- definition
- features
- elements contained

EIA study

- flow chart

7) Explain (i) Environment Management System (MIS) Standard

(ii) Precautionary Principle

(iii) Polluter Pays Principle

Environmental Management System Standards

- ISO
- ISO 14000 series
 - o Objectives
 - o Subjects covered under ISO 14000

- Key requirements of ISO 14000

Precautionary Principle

- definition
- basic components of precautionary action

Polluter Pays Principle

- definition
- scope & promoting it.

8) Define Environmental law and explain Indian Environmental Law scenario.

- definition of environmental law
- environmental law in ancient period
- environmental law in British period
- constitutional provisions and the environment
- statement of Supreme court
- fundamental norms recognized by court
- article 253 and environmental legislation

9) Describe the role of non-governmental organizations and community participation in environmental management

Non-Governmental Organizations

- definition
- classification of groups and their area of activities
- examples
- Green peace
- Conservation International

Community Participation

- definition
- reasons to use collaborative approaches
- example
- EXNORA in India for clean surroundings

10) Write down the functions of Central Pollution Control Board and State Pollution Control Board in India.

- The Water (Prevention and Control) Act, 1974 and Air (Prevention and Control) Act, 1981 assigned different functions to the Central / State Pollution Control Board.
- Functions of CPCB
- Functions of SPCB (atleast 8 points in each)

11. Explain the waste water treatment for municipal solid waste.

G. M. Masters Page :241-252

12.How is hazardous waste managed?

G. M. Masters Page:253-267

13.Discuss about solid waste management.

S.K. Dhameja

14.How can air pollution be controlled?

S.K. Dhameja

15.Explain Green house effect and ozone layer depletion

G.M.Masters384-390

16.Explain various engineering interventions.

Henry & Henike

17.Discuss in detail the waste minimization techniques.

Henry & Henike

18.Explain the clean technology options.

Henry & Henike

19.With flow sheets explain the waste management in paper and pulp industry.

Refer theory from G.M.Masters and draw flow sheets

20.With necessary flow sheets explain the waste management in textile industry.

Refer theory from G.M.Masters and draw flow sheets

21. Explain in detail the physical& chemical properties of water.

Henry & Henike

22. Explain in detail the physical& chemical properties of air.

Henry & Henike

23. Explain in detail the physical& chemical properties of land.

Henry & Henike

24. Explain in detail the Biology of water, soil.

Henry & Henike

25. Explain in detail the Biology of indoor air outdoor air.