

JEPPIAAR ENGINEERING COLLEGE

Jeppiaar Nagar, Rajiv Gandhi Salai – 600 119

DEPARTMENT OF
MECHANICAL ENGINEERING

QUESTION BANK



IV SEMESTER

GE6351 – Environmental Science and Engineering

Regulation – 2013



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DEPARTMENT OF MECHANICAL ENGINEERING

QUESTION BANK

SUBJECT : GE6351 – Environmental Science and Engineering

YEAR /SEM: II /IV

UNIT- I ENVIRONMENT, ECOSYSTEM AND BIODIVERSITY				
Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers-Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc.				
PART – A				
CO Mapping : C214.1				
Q.No	Questions	BT Level	Competence	PO
1	What do you understand by species biodiversity? Give one example.	BTL-2	Understanding	PO1
2	How is nitrogen fixed in soil?	BTL-2	Understanding	PO6, PO7
3	the characteristic features of grassland ecosystem.	BTL-2	Understanding	PO7
4	What is a hazard? What are its types?	BTL-1	Remembering	PO1
5	Define Food chain and Food web.	BTL-1	Remembering	PO7,PO2
6	What are Decomposers and their significance?	BTL-1	Remembering	PO7,PO2
7	What is Biodiversity?	BTL-1	Remembering	PO7
8	What is hotspot?	BTL-1	Remembering	PO6, PO7
9	What is an Abiotic Environment?	BTL-1	Remembering	PO7
10	what are called endangered species?	BTL-1	Remembering	PO6, PO7
11	Differentiate food chain and food web with suitable examples.	BTL-4	Analyzing	PO7
12	Define Ecological succession.	BTL-1	Remembering	PO7
13	Mention the abiotic components.	BTL-2	Understanding	PO6, PO7
14	Differentiate between insitu and exsitu conservation of biodiversity	BTL-4	Analyzing	PO6, PO7
15	Define Ecosystem.	BTL-1	Remembering	PO1,PO6, PO7,
16	Classify the Ecosystem.	BTL-4	Analyzing	PO1,PO6, PO7,

17	What are the functional components of ecosystem?	BTL-1	Remembering	PO1,PO6, PO7,
18	Define heterotrophs.	BTL-1	Remembering	PO1, PO7,
19	Name the types of consumers.	BTL-1	Remembering	PO7
20	What are the factors to be considered in Abiotic eco system?	BTL-2	Understanding	PO7
21	Define biogeochemical cycle.	BTL-1	Remembering	PO7
22	List some examples for Autotrophic succession.	BTL-3	Applying	PO7
23	What is Nitrogen fixation?	BTL-1	Remembering	PO7
24	Define the term Nitrification.	BTL-1	Remembering	PO7
25	What do you mean by Denitrification?	BTL-1	Remembering	PO7
26	What is a biological hazard?	BTL-1	Remembering	PO1,PO7
27	What are the methods by which nitrogen fixation takes place in the nature?	BTL-4	Analyzing	PO7
28	What are the two types of ecological succession?	BTL-2	Understanding	PO7
29	Define Primary and secondary succession.	BTL-1	Remembering	PO7
30	What are the forces involved in succession?	BTL-2	Understanding	PO1,PO7
31	What are the classifications of biotic components of ecosystems?	BTL-4	Analyzing	PO7
32	How does a Biome differ from an ecosystem?	BTL-2	Understanding	PO7
33	What are the types of grassland ecosystem?	BTL-2	Understanding	PO6,PO7
34	What is the structure & function of grassland ecosystem?	BTL-2	Understanding	PO6,PO7
35	What are the different types of desert ecosystem?	BTL-1	Remembering	PO6,PO7
36	Give the characteristic features of desert ecosystem.	BTL-2	Understanding	PO6,PO7
37	What is the structure & function of desert ecosystem?	BTL-2	Understanding	PO6,PO7
PART – B & C				
1	Write the importance of biological hazard in the environment.	BTL-2	Understanding	PO1,PO7
2	Explain the methods of conservation of bio diversity.	BTL-2	Understanding	PO1,PO7
3	Substantiate the statement, ‘India is a megadiversity nation’	BTL-5	Evaluating	PO1,PO6,PO 7
4	Explain food chain and food web & Explain briefly the structure of atmosphere.	BTL-2	Understanding	PO7
5	What is an ecosystem? Describe the structure and function of various components of an ecosystem.	BTL-2	Understanding	PO6,PO7
6	Give flow chart on ‘energy flow in a freshwater lake ecosystem’ and explain Explain with illustration: i) Water cycle, ii) Oxygen cycle, iii) Nitrogen cycle, iv) Carbon cycle, v) Phosphate cycle and vi) Sulphur cycle.	BTL-6	Creating	PO1,PO6,PO 7
7	Give the various hot spots of biodiversity.(ii) Explain the various threats to biodiversity along with the means to conserve them.	BTL-2	Understanding	PO1,PO6,PO 7
8	Describe the types characteristic features, structure and functions of aquatic ecosystems.	BTL-2	Understanding	PO6,PO7
9	what are the major causes of man-wild conflicts? Discuss the remedial steps that can curb the conflict.	BTL-2	Understanding	PO1,PO6,PO 7
10	Discuss the concept of biodiversity at three hierarichal levels?	BTL-2	Understanding	PO6,PO7
11	What is Biodiversity? Discuss the value and significance of biodiversity	BTL-2	Understanding	PO7

UNIT- II ENVIRONMENTAL POLLUTION
<p>Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry- Chemical composition of the atmosphere; Chemical and photochemical reactions in the atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry;- Mitigation procedures- Control of particulate and gaseous emission, Control of SO₂, NO_x, CO and HC) (b) Water pollution : Physical and chemical properties of terrestrial and marine water and their environmental significance; Water quality parameters – physical, chemical and biological; absorption of heavy metals - Water treatment processes. (c) Soil pollution - soil waste management: causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise</p>

pollution (f) Thermal pollution (g) Nuclear hazards–role of an individual in prevention of pollution – pollution case studies – Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

PART – A

CO Mapping : C214.2

Q.No	Questions	BT Level	Competence	PO
1	What are the sources of marine pollution?	BTL-2	Understanding	PO6,PO7
2	What are the damages caused by the nuclear radiations?	BTL-2	Understanding	PO6
3	What are the Characteristics of PAN?	BTL-2	Understanding	PO6
4	Explain thermal pollution.	BTL-2	Understanding	PO6,PO7
5	Define the term Noise Pollution.	BTL-1	Remembering	PO6,PO7
6	Mention the sources of water pollution?	BTL-2	Understanding	PO6,PO7
7	Mention the sources of soil pollution.	BTL-2	Understanding	PO6,PO7
8	Define green house effect.	BTL-1	Remembering	PO1,PO6
9	List the ozone depleting chemicals.	BTL-2	Understanding	PO6,PO8
10	Define biological oxygen demand and chemical oxygen demand. Write its environmental impacts.	BTL-2	Understanding	PO6,PO8
11	What do you mean by DO & BOD?	BTL-2	Understanding	PO7
12	What is Photochemical smog?	BTL-1	Remembering	PO6
13	What are dioxins?	BTL-2	Understanding	PO6,PO8
14	What are common hazardous chemicals?	BTL-2	Understanding	PO6,PO8
15	Define Environmental Pollution.	BTL-1	Remembering	PO3,PO7
16	What do you mean by indoor air pollution?	BTL-1	Remembering	PO3,PO7
17	What are the effects of various air pollutants on human health?	BTL-4	Analyzing	PO3,PO6
18	Give any 4 steps to control air pollution.	BTL-6	Creating	PO6,PO7
19	What is the effect of air pollution on plant life?	BTL-2	Understanding	PO3,PO6
20	Define SPL.	BTL-1	Remembering	PO6,PO7,PO8
21	Give noise standards recommended by CPCB committee.	BTL-4	Analyzing	PO1,PO3
22	Give the directions of Supreme Court to reduce the noise pollution during Diwali	BTL-6	Creating	PO1,PO7,PO8
23	Define water pollution & give the sources of water pollution.	BTL-2	Understanding	PO1,PO6
24	Define bioaccumulation.	BTL-1	Remembering	PO7,PO8
25	What are the effects of thermal pollution?	BTL-2	Understanding	PO3,PO6
26	How cooling ponds are used to reduce the thermal pollution?	BTL-2	Understanding	PO3,PO6
27	What do you mean by ballast water & what is the effect of it in marine ecosystem?	BTL-2	Understanding	PO1,PO7
28	What are the effects of radioactive waste in soil pollution?	BTL-2	Understanding	PO3,PO6
29	Define nuclear pollution	BTL-1	Remembering	PO1,PO3,PO7
30	What is called inversion & how it affected the people of donora?	BTL-2	Understanding	PO3,PO6
31	What is love canal tragedy?	BTL-2	Understanding	PO6,PO8
32	How arsenic contaminates the water?	BTL-2	Understanding	PO3,PO6
33	Define Solid Waste.	BTL-1	Remembering	PO6,PO8
34	What are the types of solid waste?	BTL-1	Remembering	PO6,PO8
35	What are the sources of urban and industrial solid waste?	BTL-2	Understanding	PO3,PO8
36	Mention the effects of solid waste.	BTL-2	Understanding	PO3,PO8
37	How we can control solid wastes?	BTL-2	Understanding	PO3,PO8
38	Mention the activities involved in solid waste management.	BTL-2	Understanding	PO1,PO3,PO8
39	What do you meant by commercial/industrial collection services?	BTL-2	Understanding	PO1,PO6
40	What is known as hauled container system?	BTL-2	Understanding	PO1,PO3

PART – B & C

1	Enlist the rules of management and handling biomedical waste and analyze critically the Problems associated with	BTL-4	Analyzing	PO2,PO3
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	the implementation.			
2	What is a particulate matter? How is it controlled by using equipment?	BTL-2	Understanding	PO2,PO3
3	What are the effects of heavy metals in aquatic environment?	BTL-2	Understanding	PO3
4	How is noise pollution controlled? write a detailed note on photo chemical reaction and photo chemical taking place in the atmosphere.	BTL-2	Understanding	PO2,PO6
5	How is noise pollution controlled? Explain in detail the role of an individual in pollution prevention. Write briefly about the hazards caused by the nuclear wastes.	BTL-2	Understanding	PO3,PO6
6	Explain the causes, effects and control measures of air pollution. Explain the control and prevention measures of municipal solid wastes	BTL-2	Understanding	PO1,PO6
7	Discuss the source of soil pollution ? How can it be controlled? Explain the methods of disposal of solid wastes?	BTL-2	Understanding	PO2,PO6
8	Explain the causes, effects and control measure of water pollution And marine pollution. Write a note on Control of Thermal Pollution.	BTL-2	Understanding	PO2,PO3
9	Give any seven air pollutant gases. Mention its source and effects on human health. Sources of Air Pollution. Write notes on salinity and dissolved oxygen	BTL-2	Understanding	PO2,PO6

UNIT III NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, dams- benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes – Biogas – production and uses, anaerobic digestion; case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins –Biochemical degradation of pollutants, Bioconversion of pollutants.

PART – A

CO Mapping : C214.3

Q.No	Questions	BT Level	Competence	PO
1	State any two problems caused by construction of dams.	BTL-1	Remembering	PO1,PO2
2	What is water logging? Reasons of water logging and their effects?	BTL-2	Understanding	PO3
3	What are the two functions of forests?	BTL-2	Understanding	PO7
4	What are the advantages of conjunctive use of water	BTL-2	Understanding	PO3
5	What are the causes for deforestation?	BTL-2	Understanding	PO2
6	Differentiate between deforestation and land degradation.	BTL-4	Analyzing	PO2,PO3
7	Define Hydrologic cycle.	BTL-1	Remembering	PO7
8	Name some water borne diseases and the responsible organisms	BTL-1	Remembering	PO6
9	Name the sedimentary cycle.	BTL-1	Remembering	PO3
10	What are the two adverse effects caused by overgrazing?	BTL-2	Understanding	PO3
11	What are the advantages of rain water harvesting?	BTL-2	Understanding	PO3,PO7
12	State the environmental effect of extracting & using mineral resources?	BTL-3	Applying	PO3,PO6
13	What do you understand by the terms 'mineral' and 'ore'?	BTL-2	Understanding	PO7
14	What are the various processes by which mineral	BTL-2	Understanding	PO2

	deposits are formed?			
15	What are strategic and critical minerals? Give examples.	BTL-2	Understanding	PO2,PO7
16	What are the effects of over exploitation of mineral resources?	BTL-2	Understanding	PO6
17	Give some methods that can be applied for the management of mineral resources.	BTL-2	Understanding	PO2
18	How can you differentiate between under nutrition & mal nutrition?	BTL-4	Analyzing	PO7
19	What are the changes caused by overgrazing and agriculture?	BTL-2	Understanding	PO1,PO2
20	What do you understand by micronutrient imbalance?	BTL-2	Understanding	PO2,PO3
21	What is blue baby Syndrome	BTL-2	Understanding	PO2
22	Define Eutrophication.	BTL-1	Remembering	PO2,PO3
23	Explain briefly the various methods of harvesting solar energy	BTL-2	Understanding	PO3
24	Write a note on tidal power	BTL-2	Understanding	PO3
25	Compare nuclear power with coal power.	BTL-4	Analyzing	PO1,PO3
26	Write a note on production of electricity from solar energy.	BTL-2	Understanding	PO1,PO3
27	What are renewable and non-renewable energy sources?	BTL-2	Understanding	PO1,PO7
28	Write briefly about geothermal energy.	BTL-2	Understanding	PO1,PO3
29	What are the disadvantages of H₂ as fuel?	BTL-2	Understanding	PO2
30	What are bio fuels?	BTL-2	Understanding	PO3
31	Write any two problems caused by high saline soils.	BTL-2	Understanding	PO2
PART – B & C				
1	What is Deforestation? Explain the causes for deforestation and explain its consequences.	BTL-2	Understanding	PO2,PO3
2	Enumerate the effects of modern agriculture	BTL-4	Analyzing	PO3
3	With the help of neat diagram explain the production of biogas	BTL-6	Creating	PO3
4	Analyze the environmental effects of extracting and using mineral resources and write the Remedies taken.	BTL-4	Analyzing	PO6
5	what are renewable and non-renewable energy resources? Why are non-renewable energy resources preferred for energy utilization now-a-days? What are advantages and disadvantages of hamessing non-renewable energy resources?	BTL-2	Understanding	PO6,PO7
6	Explain bioconversion of pollutants with examples	BTL-2	Understanding	PO6
7	Discuss the impact of mining on environment and human health. Write a note on Food resources and mineral resources	BTL-2	Understanding	PO2,PO3
8	What are the effects of over utilization of surfaces and ground water. Explain the role of an individual in the conservation of natural resources	BTL-2	Understanding	PO3,PO6
9	What is deforestation and give its ill effects. (ii) Illustrate the various environmental ill effects and benefits associated with dams with reference to a case study.	BTL-2	Understanding	PO3,PO6
10	Write an essay on the impact of dams on people? What are the benefits and negative impacts on people? Discuss the effects of timber extraction on forests and tribal people.	BTL-2	Understanding	PO3,PO6
11	What is land degradation? Mention the factors responsible for land degradation.	BTL-2	Understanding	PO6

12	Write a note on wind energy and tidal power	BTL-2	Understanding	PO1,PO6
13	What is soil? Give an account of soil erosion. Discuss methods for conservation of soil.	BTL-2	Understanding	PO1,PO3
14	Describe the problems associated with the over exploitation of mineral resources and ground water.	BTL-2	Understanding	PO2,PO6

UNIT IV SOCIAL ISSUES AND THE ENVIROMENT

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization environmental ethics: Issues and possible solutions – 12 Principles of green chemistry- nuclear46 accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act –The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, Earthquake, cyclone and landslides. Public awareness.

PART – A

CO Mapping : C214.4

Q.No	Questions	BT Level	Competence	PO
1	When does rehabilitation arise? Mention any one problem to government during rehabilitation.	BTL-2	Understanding	PO2
2	How is cyclone formed?	BTL-2	Understanding	PO7
3	State any two biomedical waste handling rules.	BTL-1	Remembering	PO6
4	Define sustainable development.	BTL-1	Remembering	PO1,PO7
5	What do you mean by disaster management?	BTL-1	Remembering	PO1,PO8
6	What is consumerism?	BTL-1	Remembering	PO6
7	Define the term flood?	BTL-1	Remembering	PO7
8	Define watershed management?	BTL-1	Remembering	PO6,PO7
9	What are the objectives of water act?	BTL-2	Understanding	PO3
10	What is Rain water harvesting?	BTL-1	Remembering	PO3
11	List the objectives of Forest Conservation Act.	BTL-1	Remembering	PO1,PO3
12	What is development?	BTL-1	Remembering	PO3
13	State the aspects of sustainable development.	BTL-1	Remembering	PO3,PO6
14	What is urbanization?	BTL-1	Remembering	PO6
15	State the causes of urbanization.	BTL-1	Remembering	PO6
16	State the solutions for urban energy problem.	BTL-4	Analyzing	PO3
17	State the need for water conservation	BTL-1	Remembering	PO6
18	State the different strategies for water conservation.	BTL-1	Remembering	PO6
19	What are the advantages of rain water harvesting	BTL-2	Understanding	PO7
20	What are the factors affecting watershed?	BTL-2	Understanding	PO3
21	What are the objectives of watershed management?	BTL-2	Understanding	PO3
22	State the causes for displacement of people.	BTL-1	Remembering	PO3,PO6
23	What is resettlement?	BTL-1	Remembering	PO3
24	What is environmental ethics?	BTL-1	Remembering	PO8
25	State the solutions for urban energy problem.	BTL-4	Analyzing	PO2,PO8
26	Name some of the acts enacted by the Indian Government to protect the environment.	BTL-1	Remembering	PO6
27	Mention some of the Environmental Quality Objectives.	BTL-1	Remembering	PO6,PO7
28	What is the main objective of ISO 14000 series?	BTL-1	Remembering	PO1,PO6
29	What is the role of ISO in environmental protection?	BTL-1	Remembering	PO1,PO6

30	What is the difference between normal osmosis process and reverse osmosis process?	BTL-4	Analyzing	PO1,PO3
31	Define HDI.	BTL-1	Remembering	PO3,PO7
32	What is disaster?	BTL-1	Remembering	PO3
33	What is earthquake?	BTL-1	Remembering	PO3,PO8
34	What is cyclone and mention the prevention taken at the time of cyclone?	BTL-2	Understanding	PO7
PART – B & C				
1	What are the salient features of the Air pollution Act 1981 and Environment Act 1986?	BTL-2	Understanding	PO1,PO3
2	Write short notes on Forest Conservation Act.	BTL-2	Understanding	PO1,PO3
3	What is green chemistry? Explain the various principles of green chemistry with suitable examples.	BTL-2	Understanding	PO7
4	Discuss the recent approaches to achieve sustainable development.	BTL-2	Understanding	PO2,PO7
5	Explain the salient features of water act.	BTL-2	Understanding	PO1,PO6
6	Name the law that have been framed for environmental protection and mention the objectives of each act.	BTL-1	Remembering	PO3,PO6
7	Explain the effects of nuclear accidents with two case studies. Discuss the various measures for wasteland reclamation	BTL-2	Understanding	PO2,PO6
8	Discuss the issues involved in the enforcement of legislation? Write a note on rainwater harvesting?	BTL-2	Understanding	PO2,PO3
9	Discuss the phenomenon of global warming and the factors contributing to it.	BTL-2	Understanding	PO1,PO3
10	Write an account on urban problems and detail how to solve them.	BTL-2	Understanding	PO3
11	What is sustainable development and explain its concepts?	BTL-2	Understanding	PO1,PO3
12	What is watershed? Discuss its objectives and its practices. Short notes on Nuclear Accidents and holocausts	BTL-4	Analyzing	PO1,PO3

UNIT – V – HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – Environmental impact analysis (EIA)- -GIS-remote sensing-role of information technology in environment and human health – Case studies.

PART – A

CO Mapping : C214.5

Q.No	Questions	BT Level	Competence	PO
1	What is value education? Give its significance.	BTL-2	Understanding	PO1,PO3
2	Mention any two welfare programs for children adopted in India.	BTL-1	Remembering	PO6,PO7
3	List out the advantages of family welfare programs?	BTL-2	Understanding	PO6,PO7
4	Define Population explosion.	BTL-1	Remembering	PO2

5	Define Population explosion?	BTL-1	Remembering	PO2
6	Define the term nuclear energy?	BTL-1	Remembering	PO3
7	What are the sources of HIV infection?	BTL-2	Understanding	PO6
8	What do you mean by Doubling Time?	BTL-2	Understanding	PO6,PO8
9	Mention the ways the HIV spread in various parts of world.	BTL-2	Understanding	PO2,PO6
10	What is crude fertility rate?	BTL-1	Remembering	PO6
11	What do you mean by Total fertility rate, Zero population growth?	BTL-1	Remembering	PO1,PO6
12	What are the types of population growth curves?	BTL-2	Understanding	PO6
13	What is meant by Life expectancy?	BTL-1	Remembering	PO3,PO6
14	What are the post and preindustrial phases of demographic transition?	BTL-2	Understanding	PO6
15	Give the reasons for human population.	BTL-1	Remembering	PO3
16	Mention about the four phases associated with urbanization and growth.	BTL-2	Understanding	PO3,PO6
17	Define Infant mortality rate, replacement level	BTL-1	Remembering	PO1,PO3
18	What do you mean Demographic transition?	BTL-2	Understanding	PO6
19	Expand WHO, CEDAW, NNWM	BTL-2	Understanding	PO6,PO7
20	What are the effects of infectious organisms on human?	BTL-2	Understanding	PO2,PO7
21	Which state in India has the lower birth rate?	BTL-4	Analyzing	PO7
22	When does United Nations Decade for women held?	BTL-2	Understanding	PO1,PO7
23	Mention the present world population.	BTL-5	Evaluating	PO6
24	If a nation has an annual growth rate of 2%, how many years the population will be doubled?	BTL-5	Evaluating	PO3,PO8
25	Does HIV affect population growth?	BTL-4	Analyzing	PO6
26	What does ENVIS generates?	BTL-2	Understanding	PO3,PO6
27	Explain the population clock.	BTL-1	Remembering	PO3,PO7
28	Mention the theories on population explosion.	BTL-2	Understanding	PO7
29	What does Value-based environmental education emphasizes?	BTL-2	Understanding	PO1,PO7
30	When does AIDS discovered?	BTL-2	Understanding	PO3,PO6
31	Define Human Rights	BTL-1	Remembering	PO1,PO8
32	Mention the activities involved in women welfare in two lines.	BTL-2	Understanding	PO6
33	What do you meant by carcinogenic, mutagenic, neurotoxins	BTL-1	Remembering	PO6,PO7
34	What does environment education's objective?	BTL-2	Understanding	PO1
35	What does Draft Declaration on human rights describes?	BTL-2	Understanding	PO1,PO8
36	Whether the Life expectancy over the globe has improved or not?	BTL-4	Analyzing	PO1
37	What is Database?	BTL-1	Remembering	PO3,PO6
38	Mention the advantages of remote sensing.	BTL-2	Understanding	PO6

PART B& C

1	Describe Environment and human health relation.	BTL-2	Understanding	PO6,PO7
2	What do you mean by environmental impact analysis? What are the methods followed EIA?	BTL-2	Understanding	PO2,PO3
3	Briefly discuss HIV/AIDS, mode of its spread and its effect on environment.	BTL-2	Understanding	PO1,PO6
4	Discuss women and child welfare programs practiced in India. What are the hurdles encountered.	BTL-2	Understanding	PO3,PO6
5	What are sparsely populated areas? Give examples and reasons for poor population in those areas.	BTL-4	Analyzing	PO1,PO3

6	Write informative notes on (i) Human rights (ii) Women and child welfare	BTL-2	Understanding	PO3,PO6
7	What are the objectives and elements of value education? How can the same be achieved?	BTL-2	Understanding	PO1,PO3
8	Describe the role of information technology in environment and human health.	BTL-2	Understanding	PO3,PO6
9	Write an explanatory note on human right and family welfare.	BTL-4	Analyzing	PO3,PO6
10	Give the various reasons for the population explosion.	BTL-4	Analyzing	PO1,PO6
11	Explain population growth and population explosion with the various terms involved to control population.	BTL-2	Understanding	PO6,PO8
12	Discuss Various Issues and Measures for Women and Child Welfare.	BTL-2	Understanding	PO6
13	Write a short note on HIV and Value education?	BTL-2	Understanding	PO1,PO7

UNIT- I ENVIRONMENT, ECOSYSTEM AND BIODIVERSITY

Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers-Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc.

PART – A

1. What do you understand by species biodiversity? Give one example.	(APRIL/MAY 2017)
Species diversity is the diversity between different species. The sum of varieties of all the living organisms at the species level is known as species diversity. Example: i) Plant species: Apple, mango, grapes, wheat, rice ii) Animal species: Lion, tiger, elephant, deer	
2. How is nitrogen fixed in soil?	(APRIL/MAY 2017)
They contain symbiotic bacteria called rhizobia within nodules in their root systems, producing nitrogen compounds that help the plant to grow and compete with other plants. When the plant dies, the fixed nitrogen is released, making it available to other plants; this helps to fertilize the soil.	
3. Give the characteristic features of grassland ecosystem.	(APRIL/MAY 2016)
Plants(Producers) ⊥ Rat (Primary consumer) ⊥ Snakes(secondary consumer) ⊥ Eagles(Tertiary consumer)	
4. What is a hazard? What are its types?	(APRIL/MAY 2016)
A hazard is something which causes a danger or risk to somebody. Its major types are physical hazard, chemical hazard, and biological hazard.	
5. Define Food chain and Food web.	(APRIL/MAY 2015)
A food chain is a picture or model that shows the flow of energy from Autotrophs to a series of organisms in an environment. The energy that it flows can be different for each food chain. The relationships between the components of the food chain are very complex. The network like interaction of organisms is called as food web.	
6. What are Decomposers and their significance?	(NOV/DEC 2012)(NOV/DEC 2015)
The organisms which breakdown the complex compounds into simple products are called as decomposers or reducers.	
7. What is Biodiversity?	(NOV/DEC 2012)(APRIL/MAY 2015)
Biodiversity is defined as the variety and variability among all groups of living organisms and the ecosystem in which they occur.	
8. What is hotspots?	(NOV/DEC 2015)
The hotspots are the geographic areas which possess the high endemic species	
9. What is an Abiotic Environment?	(NOV/DEC 2014)
10. what are called endangered species?	(NOV/DEC 2014)
11. Differentiate food chain and food web with suitable examples.	(MAY/JUNE 2013) (NOV/DEC 2013)
Food Chain : A food chain is a picture or model that shows the flow of energy from Autotrophs to a series of organisms in an environment. A food chain only follows just one path as animals find food. eg: A hawk eats a snake, which has eaten a	

frog, which has eaten a grasshopper, which has eaten grass.

Grass ----> Grasshopper ----> Frog ----> Snake ----> Hawk

Food web : A food web is several food chains connected together. A food web shows the many different paths plants and animals are connected. eg: A hawk might also eat a mouse, a squirrel, a frog or some other animal. The snake may eat a beetle, a caterpillar, or some other animal. And so on for all the other animals in the food chain.

12. Define Ecological succession. (NOV/DEC 2013)

"Ecological succession" is the observed process of change in the species structure of an ecological community over time. Within any community some species may become less abundant over some time interval, or they may even vanish from the ecosystem altogether. Similarly, over some time interval, other species within the community may become more abundant, or new species may even invade into the community from adjacent ecosystems. This observed change over time in what is living in a particular ecosystem is "ecological succession".

13. Mention the abiotic components. (MAY/JUNE 2013)

Physical and Chemical components such as climatic factors, edaphic factors, geographical factors, energy, nutrients and toxic substances constitute the abiotic structure.

14. Differentiate between insitu and exsitu conservation of biodiversity (NOV/DEC 2012)

Insitu conservation	Exsitu conservation
Conserving the species in its own habitat	Protecting the fauna and flora outside the natural habitat
It is very cheap and convenient method	It is expensive method
Eg: biosphere reserves, national parks , sanctuaries, gene sanctuaries	Eg: Botanical gardens, seed banks, museums, microbial culture collection

15. Define Ecosystem. (NOV/DEC 2012)

Ecosystem has been defined as a system of interaction of organisms with their surroundings. Numerous dynamic interactions are occurring within an ecosystem and these are complex. Always alterations to the biotic and Abiotic components are happening within the ecosystems.

16. Classify the Ecosystem.

The ecosystem can be generally classified into three types.

- └ Natural Ecosystem;
- └ Artificial Ecosystem;
- └ Incomplete Ecosystem

17. What are the functional components of ecosystem?

Biotic and Abiotic are the components of eco system

18. Define heterotrophs.

Those organisms which depend on others (Producers-Autotrophs) for their energy requirements are known as Consumers or Heterotrophs.

19. Name the types of consumers.

1. Herbivores (or) Primary Consumers; 2. Carnivores (or) Secondary Consumers 3. Omnivores (or) Tertiary Consumers

Significance
They break down complex compounds of dead organisms, absorb some of the decomposed or breakdown products and release inorganic nutrients into the environment, thus making them available again in to the autotrophs.

Example: bacteria and fungi.

20. What are the factors to be considered in Abiotic eco system?

Climatic factors, Physical factors and Chemical factors.

21. Define biogeochemical cycle.

Two types of biogeochemical cycles are 1. Gaseous Cycle (Eg. N₂ and O₂ cycles); 2. Sedimentary Cycle (Sulphur and Phosphorus cycles)

22. List some examples for Autotrophic succession.

Autotrophs are nothing but producers which synthesize their food through photosynthesis. E.g: All green plants and trees

23. What is Nitrogen fixation?

Hydrogen bonding of water molecule is defined as the bonding developed between the positive hydrogen end of one molecule and the negative lone pair of another water molecule. Four hydrogen bonds are formed around each and every water molecules

24. Define the term Nitrification.

The process of converting the free nitrogen gas available in the atmosphere into compounds of nitrogen is called as nitrogen fixation.

25. What do you mean by Denitrification?

The process of converting ammonia into nitrites with the help of nitrosomonas bacteria, and nitrites into nitrates with the help of nitrobactor bacteria is called as nitrification.

26. What is a biological hazard?

Biological hazards come from working with animals, people or infectious plant materials. Work in day care, hospitals,

hotel laundry and room cleaning, laboratories, veterinary offices and nursing homes may expose you to biological hazards
27. What are the methods by which nitrogen fixation takes place in the nature? Natural nitrogen fixation can be obtained from lightening of clouds and bacteria and fungi present in soil and water. Artificial fixation of nitrogen is obtained with the help of fertilizer of fertilizer industries, which convert the atmosphere nitrogen into ammonia.
28. What are the two types of ecological succession? (i) Primary ecological succession comprising of Hydrarch (Hydrosere) and Xerarch (Xerosere) and (ii) Secondary succession involving establishment of biotic communities.
29. Define Primary and secondary succession. (i) Primary ecological succession comprises of Hydrarch(Hydrosere – establishment starting in a watery area like pond and lake) and Xerarch (Xerosere – establishment starting in a dry area like, desert and rock) and (ii) Secondary succession involving establishment of biotic communities in an area, where some types of biotic community is already present
30. What are the forces involved in succession? Nudation, Invasion (Migration & Establishment), Competition, Reaction and Stabilization
31. What are the classifications of biotic components of ecosystems? Producers, Consumer and Decomposers are the biotic components of an ecosystem
32. How does a Biome differ from an ecosystem? Biome is defined as a major ecological community of organisms occupying in a larger area.
33. What are the types of grassland ecosystem? a) Savannah ecosystem, b) Forest ecosystem and c) Tundra ecosystem
34. What is the structure & function of grassland ecosystem? Structure and function of grassland ecosystem.-Abiotic- C,H,O,N,P,S etc – supplied by rates, nitrates, phosphates and sulphates. Biotic- producers – grasses, forbs and shrubs, consumers-cows, buffaloes, deer, sheep, decomposers – fungi and bacteria.
35. What are the different types of desert ecosystem? Different types of desert ecosystem – Tropical – characterized by only few species, Temperate – characterized by hot summer and cool winter and cold – characterized by cold winters and warm summers
36. Give the characteristic features of desert ecosystem. Characteristic of desert eco system: 1. Desert air is dry and the climate is hot, 2. Annual rainfall is less than 2.5 cm.; 3. The soil is very poor in nutrients and organic matter and 4. Vegetation is very poor.
37. What is the structure & function of desert ecosystem? Structure & function of desert ecosystem- Abiotic – temperature, rainfall, sunlight, water, Biotic – producers – shrubs, bushes, grasses, consumers – squirrels, mice, foxes, decomposers – fungi and bacteria.
PART – B & C
1. Substantiate the statement, 'India is a megadiversity nation'. (APRIL/MAY 2017) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 103</i>
2. Explain the methods of conservation of bio diversity. (APRIL/MAY 2017) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 96</i>
3. Write the importance of biological hazard in the environment. (APRIL/MAY 2017) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 88</i>
4. Explain food chain and food web & Explain briefly the structure of atmosphere . (NOV/DEC 2015), (NOV/DEC 2014),(MAY/JUNE 2016) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 76</i>
5. What is an ecosystem? Describe the structure and function of various components of an ecosystem. <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 73</i>
6. Give flow chart on 'energy flow in a freshwater lake ecosystem' and explain Explain with illustration: i) Water cycle, ii) Oxygen cycle, iii) Nitrogen cycle, iv) Carbon cycle, v) Phosphate cycle and vi) Sulphur cycle. (NOV/DEC 2014) , (MAY/JUNE 2016) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 79</i>
7. Give the various hot spots of biodiversity. (ii) Explain the various threats to biodiversity along with the means to conserve them. (MAY/JUNE 2013),(MAY/JUNE 2016) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 108</i>
8. Describe the types characteristic features, structure and functions of aquatic ecosystems. (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 88</i>
9. What are the major causes of man-wild conflicts? Discuss the remedial steps that can curb the conflict. (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No: 109</i>
10. Discuss the concept of biodiversity at three hierarchical levels? (NOV/DEC 2015)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No: 97

11.What is Biodiversity? Discuss the value and significance of biodiversity

(NOV/DEC 2014)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No: 94

UNIT- II

ENVIRONMENTAL POLLUTION

Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry- Chemical composition of the atmosphere; Chemical and photochemical reactions in the atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry;- Mitigation procedures- Control of particulate and gaseous emission, Control of SO₂, NO_x, CO and HC) (b) Water pollution : Physical and chemical properties of terrestrial and marine water and their environmental significance; Water quality parameters – physical, chemical and biological; absorption of heavy metals - Water treatment processes. (c) Soil pollution - soil waste management: causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards–role of an individual in prevention of pollution – pollution case studies – Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

PART – A

1.What are the sources of marine pollution?

(NOV/DEC 2014)(APRIL/MAY 2017)

The sources here are

- Rivers – bring pollutants from their drainage basins
- Coastline settlements in the form of hotels, industries.
- Oil drilling & shipment
- Radioactive disposal into deep sea

2. What are the damages caused by the nuclear radiations?

(APRIL/MAY 2017)

Genetic damages – The damage is caused by radiations, which induce mutations in DNA. The damage is often seen in the offsprings and may be transmitted upto several generations.

Somatic damage – This includes burns, miscarriages, eye cataract, bone cancer etc

3. What are the Characteristics of PAN?

(APRIL/MAY 2017)(MAY/JUNE 2016)

PAN (Peroxyacetyl nitrate) is a kind of air pollution. It is part of smog. PAN makes people's eyes hurt and it is bad for lungs. It is also damages plants.

4.Explain thermal pollution

(MAY/JUNE 2013)(MAY/JUNE 2016)

Thermal pollution can be defined as the presence of waste heat in the water which can cause undesirable changes in the environment.

5. Define the term Noise Pollution.

(NOV/DEC 2013)(NOV/DEC 2012)(APRIL/MAY 2015)

Noise pollution is the disturbing or excessive noise that may harm the activity or balance of human or animal life. The source of most outdoor noise worldwide is mainly caused by machines and transportation systems, motor vehicles, aircraft, and trains.

6. Mention the sources of water pollution?

(MAY/JUNE 2013)

- Pesticides and biocides
- Heavy metals, mercury, crude oil, plastics
- Industrial and agricultural wastes
- Thermal pollution

7. Mention the sources of soil pollution.

(MAY/JUNE 2013)

Domestic wastes include garbage, rubbish material like glass, plastics, metallic cans, paper, fibers, cloth rags, containers, paints, varnishes etc.

Industrial wastes are the effluents discharged from chemical industries, paper and pulp mills, tanneries, textile mills, steel industries, distilleries, refineries, pesticides and fertilizer industries, pharmaceutical industries, food processing industries, cement industries, thermal and nuclear power plants, mining industries etc.

8.Define green house effect.

(MAY/JUNE 2013)

The greenhouse 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; much like a green house absorbs and holds the sun's heat

9.List the ozone depleting chemicals.

(MAY/JUNE 2013)

Chlorofluorocarbons (CFC) are responsible for ozone layer depletion.

10. Define biological oxygen demand and chemical oxygen demand. Write its environmental impacts. (NOV/DEC 2013)

Biological Oxygen Demand (BOD) is defined as the amount of DO required to aerobically decompose biodegradable organic matter over a period of 5 days at 20°C.

Chemical oxygen demand (COD) is commonly used to indirectly measure the amount of organic compounds in water.

11. What do you mean by DO & BOD? (NOV/DEC 2012)

Dissolved Oxygen (DO) is the amount of O₂ dissolved in a given quantity of water at a particular temperature & atmospheric pressure. Biological Oxygen Demand (BOD) is defined as the amount of DO required to aerobically decompose biodegradable organic matter over a period of 5 days at 20°C.

12. What is Photochemical smog? (NOV/DEC 2012)

- Hydrocarbons + NO_x + Sunlight → Photochemical smog
- It is the chemical reaction of sunlight, nitrogen oxides and volatile organic compounds in the atmosphere, which leaves airborne particles and ground level zone which cause poor visibility, eyes and lungs irritations.

13. What are dioxins? (NOV/DEC 2012)

Dioxins are poisonous chemicals formed as a product during the manufacture of pesticides and disinfectants. Dioxins are also formed due to partial combustion of plastics, coal, etc

14. What are common hazardous chemicals? (NOV/DEC 2012)

Pesticides and herbicides, gun powder, radio activewastes, heavy metals like Pb, Hg, As are some common hazardous chemicals.

15. Define Environmental Pollution.

Environmental Pollution is defined as any undesirable change in the physical, chemical, or biological characteristics of any component of the environment (air, water, soil) which can cause harmful effects on various forms of property.

16. What do you mean by indoor air pollution?

Houses in the under-developed & developing countries use fuels like wood kerosene in their kitchens & incomplete combustion produces toxic gas like CO. The most important indoor radioactive material is radon gas that can be emitted from building materials like bricks, concrete etc. which are derived from soil containing radium. This is called indoor air pollution.

17. What are the effects of various air pollutants on human health?

Name of the Pollutant	Name of the Diseases
NO ₂	Chronic Bronchitis, Emphysema
CO	Suffocation, dizziness, Unconsciousness, Long Exposure lead to death
Benzene, PCB, dioxins	Mutations, reproductive problems, cancer

18. Give any 4 steps to control air pollution.

- ↳ Siting of Industries after proper EIA (Environmental Impact Assessment) studies. ↳ Using low sulphur coal in industries
- ↳ Using mass transport system ↳ Planting more trees

19. What is the effect of air pollution on plant life?

Air pollutants affect plants by entering through stomata destroy chlorophyll and affect photosynthesis. Damage to leaf structure causes necrosis (dead areas of leaf), chlorosis (loss or reduction of chlorophyll causing yellowing of leaf), epinasty (downward curling of leaf), abscission (dropping of leaves).

20. Define SPL.

The noise measurements are expressed as Sound Pressure Level (SPL) which is the logarithmic ratio of the sound pressure to a reference pressure. It is expressed in decibels. The international reference pressure is 2×10^{-5} Pa which is the average threshold of hearing for a healthy ear.

21. Give noise standards recommended by CPCB committee.

Area code	Category of Area	Noise Level during day (dB)	Noise Level during night (dB)
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zone	50	40

22. Give the directions of Supreme Court to reduce the noise pollution during Diwali.

- The manufacture, sale or use of fire crackers generating noise level exceeding 125 db at 4 m distance from the point of bursting shall be prohibited.
- The above limit is reduced by 5 log N db (N = No of crackers joined together) for individual fire crackers constituting the series.
- The fire crackers should not be used in silence zones.
- Giving Environmental education & awareness to the masses

23. Define water pollution & give the sources of water pollution.

Water pollution can be defined as alteration in physical, chemical or biological characteristics of water making it unsuitable for designated use in its natural state.

There are 2 sources of water pollution. They are point sources – specific sites near water which directly discharge effluents into them & non point sources – sources are scattered and individually collect pollute water.

24. Define bioaccumulation.

The non-biodegradable substances do not undergo any degradation and they tend to accumulate in the organism's body. This is known as bioaccumulation.

25. What are the effects of thermal pollution?

- a. The solubility of O₂ is decreased at high temperature.
- b. Toxicity of pesticides increases with increase in temperature
- c. Discharge of heated water can even kill young fishes.
- d. Fish migration is affected.

26. How cooling ponds are used to reduce the thermal pollution?

Water from condensers is stored in ponds where natural evaporation cools the water which can then be recirculated or discharged in nearby water body

27. What do you mean by ballast water & what is the effect of it in marine ecosystem?

After delivering oil through sea-route, earlier empty tankers used to be filled with water called ballast water to maintain balance. The ballast water containing residual oil from tankers was released into sea on completion of return journey. Oil in sea water spread over a large area & affects sensitive flora & fauna.

28. What are the effects of radioactive waste in soil pollution?

Radioactive waste accumulates in food chain that leads to bioaccumulation & biomagnification. Radioisotopes which attach with the clay become a source of radiations in the environment. They replace essential elements in the body.

29. Define nuclear pollution.

Radioactive substances undergo natural radioactive decay in which unstable isotopes spontaneously give out fast moving particles, high energy radiations or both, at a fixed rate until a new stable isotope is formed.

30. What is called inversion & how it affected the people of donora?

The condition when cold layer is trapped below the warm layer is called as inversion. The top fog layer reflected the solar radiations during the day time. During night the top layer had been losing heat which further cooled the layer to stabilize.

31. What is love canal tragedy?

The love canal in a suburb of Niagara falls, New York was built by William love which was later dug up & was used to bump sealed steel drums of chemical waste. The site was later covered with clay & top soil and was later sold to the city board of education in 1953. In 1976 the children playing in the canal area received chemical burns & the residents started complaining of foul smell.

32. How arsenic contaminates the water?

Excess use of lead arsenate & copper arsenate as pesticides in high yielding varieties of summer paddy & jute crop percolate into the top soil and contaminates the ground water.

33. Define Solid Waste.

It is defined as the waste, arising from human and animal activities that are discarded as useless or unwanted one.

34. What are the types of solid waste?

The types are: * Urban solid waste; * Industrial solid waste

35. What are the sources of urban and industrial solid waste?

Urban solid waste – Residential area, commercial area open area waste, constructional waste, biomedical waste.
Industrial solid waste- Chemical industry, paint industry petroleum refinery industry, paper industry, metal industry.

36. Mention the effects of solid waste.

- *Spreading of fungal diseases;
- *Bad odours;
- *Burning of waste produce chemicals which are harmful to human life;
- *Contaminates water & *Affects the characteristics of soil

37. How we can control solid wastes?

Reuse and recycling of waste, proper treatment of the waste, neutralize hazardous characteristics, using innovation technology.

38. Mention the activities involved in solid waste management.

- Waste generation,
- onsite handling ,storage and processing
- collection
- transfer and transport
- processing and recovery and disposal

39. What do you meant by commercial/industrial collection services?

The use of large movable and stationary containers and also large stationary compactors can be done by this method. Compactors are used to compress the material directly into the large containers or in the form of balls which are then placed in the large containers

40. What is known as hauled container system?

Collection system in which containers used for storage of waste are hauled to the processing, transfer, emptied and

returned to either their original location or some other location are defined as hauled container system.

PART – B & C

1.Enlist the rules of management and handling biomedical waste and analyze critically the Problems associated with the implementation. (APRIL/MAY 2017)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No: 159

2.What is a particulate matter? How is it controlled by using equipment? (APRIL/MAY 2017)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:120

3.What are the effects of heavy metals in aquatic environment. (APRIL/MAY 2016)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:141

4.How is noise pollution controlled? write a detailed note on photo chemical reaction and photo chemical taking place in the atmosphere. (APRIL/MAY 2016)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:165

5.How is noise pollution controlled? Explain in detail the role of an individual in pollution prevention. Write briefly about the hazards caused by the nuclear wastes. (APRIL/MAY 2015)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:165,168

6.Explain the causes, effects and control measures of air pollution . (APRIL/MAY 2015)(MAY/JUNE 2016)

Explain the control and prevention measures of municipal solid wastes

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:118

7.Discuss the source of soil pollution ? How can it be controlled? (NOV/DEC 2015)

Explain the methods of disposal of solid wastes?

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:158

8.Explain the causes, effects and control measure of water pollution and marine pollution. Write a note on Control of Thermal Pollution. (MAY/JUNE 2013) (NOV/DEC 2013)(MAY/JUNE 2016)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:137

9.Give any seven air pollutant gases. Mention its source and effects on human health. Sources of Air Pollution. Write notes on salinity and dissolved oxygen. (NOV/DEC 2015)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:119

10. Write a note on Control of Thermal Pollution. (MAY/JUNE 2013) (NOV/DEC 2013)

Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:168

UNIT III

NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes – Biogas – production and uses, anaerobic digestion; case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins –Biochemical degradation of pollutants, Bioconversion of pollutants. Field

PART – A

1.Write any two problems caused by high saline soils. (APRIL/MAY 2017)

- i)Low agriculture productivity
- ii) Low economic returns and soil erosions.

2. What are the harmful effects of land degradation? (NOV/DEC 2013)(MAY/JUNE 2016)

It also means the deterioration in the quantity of land or soil that affects phenomena such as floods and bushfires. The land degradation threatens not only the viability of agriculture, but also water quality, human health, biodiversity and the fundamental ecological processes on which all life depend

3. Mention the major environmental impacts of Mining. (NOV/DEC 2013)(MAY/JUNE 2016)

The environmental impact of mining includes erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. ... Some mining methods may have significant environmental and public health effects

4. Define Eutrophication.	(NOV/DEC 2012)(NOV/DEC 2015)
A large portion of n and p used in crop fields is washed off by the runoff water and reaches the water bodies causing over nourishment of lakes called Eutrophication.	
5. What are renewable and non-renewable energy sources?	(NOV/DEC 2012)(APRIL/MAY 2015)
Renewable energy resources are natural resources which can be regenerated continuously and are inexhaustible. They can be used again and again. Eg: solar energy, wind energy etc. Non-renewable energy resources are energy resource that is not replaced or is replaced only very slowly by natural processes. Eg: fossil fuels--oil, natural gas, and coal.	
6. What are the effects of pesticides?	(NOV/DEC 2015)
Pesticides are designed to kill and because their mode of action is not specific to one species, they often kill or harm organisms other than pests, including humans. ... Children, and indeed any young and developing organisms, are particularly vulnerable to the harmful effects of pesticides .	
7. What is desertification?	(APRIL/MAY 2015)
Desertification is a type of land degradation in which a relatively dry area of land becomes increasingly arid, typically losing its bodies of water as well as vegetation and wildlife. It is caused by a variety of factors, such as through climate change and through the overexploitation of soil through human activity	
8. Define the term landslide.	(NOV/DEC 2014)
1 : the usually rapid downward movement of a mass of rock, earth, or artificial fill on a slope; also : the mass that moves down. 2 a : a great majority of votes for one side. b : an overwhelming victory.	
9. What are renewable resources.	(NOV/DEC 2014)
A renewable resource (Risorsa rinnovabile) is a resource which can be used repeatedly and replaced naturally. Examples include oxygen, fresh water, solar energy and biomass. Renewable resources may include goods or commodities such as wood, paper and leather.	
10. What are the changes caused due to overgrazing?	(NOV/DEC 2013)
Overgrazing occurs when plants are exposed to intensive grazing for extended periods of time, or without sufficient recovery periods. It can be caused by either livestock in poorly managed agricultural applications, game reserves, or nature reserves. ... Cows are the main things that causes overgrazing and "overgrazing"	
11. Write the ways of drought management.	(MAY/JUNE 2013)
The purpose of the Drought Management Strategy is to reduce water use during a drought consistent with the goals and objectives of the Water Resources Management Strategy. ... The water conservation program is intended to provide for long-term water savings as opposed to a single year or irrigation season.	
12. State the reasons of over exploitation of forests.	(MAY/JUNE 2013)
Thus forest canopy acts as a sink for CO ₂ thereby reducing the problem of global warming caused by greenhouse gas CO ₂ . Wild life ... use of fuel wood and charcoal, expansion of urban, agricultural and industrial areas and overgrazing have together led to over-exploitation of our forests leading to their rapid degradation.	
13. What is water logging? Reasons of water logging and their effects?	(NOV?DEC 2012)
Water logging is the land where water stand for most of the year. Problems or effects : During water logged conditions pore voids in the soil get filled with water and the soil –air gets depleted . In such a condition the roots of the plants do not get adequate air for respiration. So, mechanical strength of the soil decreases and crop yield falls. Causes: excessive water supply to the croplands, heavy rain, poor drainage Remedy : preventing excessive irrigation, sub-surface drainage technology and bio drainage by trees like eucalyptus tree are some method of preventing water logging.	
14. State any two problems caused by construction of dams.	
<ul style="list-style-type: none"> • Thousands of hectares of forests have been cleared for executing river valley projects. • The greatest social cost of big dam is the widespread displacement of tribal people such a biodiversity, cannot be tolerated. 	
15. What are the two functions of forests?	
They recycle rain water and remove pollutants from air. They moderate temperature and weather and help to maintain humidity.	
16. What are the advantages of conjunctive use of water?	
Consumptive use – water is completely utilized and not reused. Non – consumptive use – water is not completely utilized and is reused.	
17. What are the causes for deforestation?	
Destruction of forest area. Submergence of forest area under water.	
18. Differentiate between deforestation and land degradation.	
Land degradation – is the process of deterioration of soil and loss of the fertility of soil. Deforestation – process of removal or elimination of forests resources due to many natural or man – made activities.	
19. Define Hydrologic cycle.	

Hydrologic cycle is defined as the interchange of water between the atmospheres and the Earth's surface.
20. Name some water borne diseases and the responsible organisms. Typhoid, Paratyphoid, Diarrhoea, Cholera, Bacillary Dysentery - Bacteria Amoebiasis, Giardiasis - Protozoa Viral Hepatitis (Jaundice), Poliomyelitis - Viruses Roundworm, hookworm, threadworm - Helminthes
21. Name the sedimentary cycle. Phosphorous cycle and Sulphur cycle
22. What are the two adverse effects caused by overgrazing? Land degradation, soil erosion, loss of useful species.
23. What are the advantages of rain water harvesting? Advantages of rain water harvesting – Reduction in the use of current for pumping water, increase the availability of water from the wells, rise in ground water levels, minimizing soil erosion and flood hazards, upgrading social and environmental status.
24. State the environmental effect of extracting & using mineral resources? Rapid depletion of mineral deposits, causes environmental pollution
25. What do you understand by the terms ‘mineral’ and ‘ore’? Ore is the unprocessed part of the rock excavated
26. What are the various processes by which mineral deposits are formed? Minerals are naturally occurring substances having definite chemical and physical properties. Ores are minerals or combination of minerals from which useful substances such as metals can be profitably extracted.
27. What are strategic and critical minerals? Give examples. Strategic minerals – required for the defence of the country [Eg. – manganese, cobalt.] Critical minerals – essential for the economic power of a country. [Eg. – iron, aluminium.]
28. What are the effects of over exploitation of mineral resources? Because of the loss of the top predator, a dramatic increase in their prey species can occur. In turn, the unchecked prey can then overexploit their own food resources until population numbers dwindle, possibly to the point of extinction.
29. Write briefly about geothermal energy. Temperature of the earth increases at the rate of 20 – 75 ^o C per Km, when we move down the earth’s surface. High temperature and pressure fields exist below the earth’s surface in many places. The energy harnessed from the high temperature present inside the earth is called geothermal energy.
30. Write a note on tidal power. Ocean tides produced by gravitational forces of the sun and moon contain enormous amount of energy which can be harnessed by constructing a tidal barrage.
31. What is blue baby Syndrome? When nitrogen fertilizers are applied in the fields they leach deep into the soil and contaminate the ground water, the nitrate in the water gets increased, when the nitrate concentration exceeds 25mg/lit they cause serious health problem called blue baby syndrome.
PART – B & C
1. What is Deforestation? Explain the causes for deforestation and explain its consequences. (NOV/DEC 2013) (APRIL/MAY 2017) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:19</i>
2. Enumerate the effects of modern agriculture (MAY/JUNE 2013), (MAY/JUNE 2016), (APRIL/MAY 2017) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:50</i>
3. With the help of neat diagram explain the production of biogas. (APRIL/MAY 2015) (APRIL/MAY 2017) (MAY/JUNE 2016) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:61</i>
4. Analyze the environmental effects of extracting and using mineral resources and write the Remedies taken. (APRIL/MAY 2017) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:25</i>
5. What are renewable and non-renewable energy resources? Why are non-renewable energy resources preferred for energy utilization now-a-days? What are advantages and disadvantages of harnessing non-renewable energy resources? (MAY/JUNE 2016) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:57</i>
6. Explain bioconversion of pollutants with examples. (MAY/JUNE 2016) <i>Ref: “Environmental Science and Engineering” By Benny Joseph, Pg.No:60</i>

<p>7. Discuss the impact of mining on environment and human health. Write a note on Food resources and mineral resources. (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:25</i></p>
<p>8. What are the effects of over utilization of surfaces and ground water. Explain the role of an individual in the conservation of natural resources. (NOV/DEC 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:35</i></p>
<p>9. What is deforestation and give its ill effects. (ii) Illustrate the various environmental ill effects and benefits associated with dams with reference to a case study. (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:18</i></p>
<p>10. Write an essay on the impact of dams on people? What are the benefits and negative impacts on people? Discuss the effects of timber extraction on forests and tribal people. (NOV/DEC 2013,2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:28</i></p>
<p>11. What is land degradation? Mention the factors responsible for land degradation. (MAY/JUNE 2013) (NOV/DEC 2013) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:65</i></p>
<p>12. Write a note on wind energy and tidal power <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:57</i></p>
<p>13. What is soil? Give an account of soil erosion. Discuss methods for conservation of soil. <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:66</i></p>
<p>14. Describe the problems associated with the over exploitation of mineral resources and ground water. <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:38,27</i></p>

<p>UNIT IV SOCIAL ISSUES AND THE ENVIROMENT</p>
<p>From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization environmental ethics: Issues and possible solutions – 12 Principles of green chemistry- nuclear⁴⁶ accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act –The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness.</p>
<p>PART – A</p>
<p>1. When does rehabilitation arise? Mention any one problem to government during rehabilitation. (APRIL/MAY 2017) Rehabilitation involves making the system to work again by allowing the system to function naturally. It includes replacing the lost economic assets, safeguard employment, provide safe land for building, restore social services, repair damaged infrastructures. Sardor Sarovar Dam: As a result of construction of the dam about 573 villages consisting 10 lakh people would be homeless and 45,000 hectares of forest and 2,00,000 hectares of cultivated lands would be submerged in Maharashtra.</p>
<p>2. How is cyclone formed? (APRIL/MAY 2017) Cyclone is a meteorological phenomena, intense depressions forming over the open oceans and moving towards the land. On reaching the shores, it move into the interior of the land or along the store lines.</p>
<p>3. State any two biomedical waste handling rules. (MAY/JUNE 2016) 1) Ministry of Environment & forests 2) Central/State Ministry of Health Family Welfare, Veterinary and Animal Husbandry 3) Ministry of Defence 4) Central Pollution Control Board</p>
<p>4. Define sustainable development. (NOV/DEC 2013)(MAY/JUNE 2016) Sustainable development is defined as, “meeting the needs of the present without compromising the ability of future generation to meet to meet their own needs”.</p>
<p>5. What do you mean by disaster management? (APRIL/MAY 2015) About disaster management. ... Disaster Management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular</p>

preparedness, response and recovery in order to lessen the impact of disasters.

6. What is consumerism?

(APRIL/MAY 2015)

Consumerism is a cultural model that promotes the acquisition of goods, and especially the purchase of goods, as a vehicle for personal satisfaction and economic stimulation. ... The model relies on stimulating consumer desire for goods far in excess of satisfying needs.

7. Define the term flood?

(NOV/DEC 2015)

An overflow of a large amount of water beyond its normal limits, especially over what is normally dry land

8. Define watershed management?

(NOV/DEC 2015)

Watershed management is a term used to describe the process of implementing land use practices and water management practices to protect and improve the quality of the water and other natural resources within a watershed by managing the use of those land and water resources in a comprehensive manner

9. What are the objectives of water act?

(NOV/DEC 2014)

The main objectives of the Water Act are to provide for prevention, control and abatement of water pollution and the maintenance or restoration of the wholesomeness of water. It is designed to assess pollution levels and punish polluters.

10. What is Rain water harvesting?

(NOV/DEC 2014)

In urban areas, the construction of houses, footpaths and roads has left little exposed earth for water to soak in. In parts of the rural areas of India, floodwater quickly flows to the rivers, which then dry up soon after the rains stop. If this water can be held back, it can seep into the ground and recharge the groundwater supply.

11. List the objectives of Forest Conservation Act.

(NOV/DEC 2013)

Illegal non-forest activity within a forest area can be immediately stopped under this act. Provides conservation of all types of forests. Non forest activities include clearing of forest land for cultivation of any types of crops.

12. What is development?

Development should bring benefits to all, not only for the present generation, but also for the future generation

13. State the aspects of sustainable development.

Inter- generational equity & Intra –generational equity

14. What is urbanization?

It is the movement of human population from rural areas to urban areas for the want of better education, communication, health, employment, etc.,

15. State the causes of urbanization.

Since cities are the main centers of economic growth, trade, transportation, education, medical facilities and employment, rural people moves to cities.

16. State the solutions for urban energy problem.

Urban people may use public transport instead of using motor cycles and cars. Production capacity may be increased.

17. State the need for water conservation.

Over exploitation of ground water leads to drought. Agricultural and industrial activities require more fresh water.

18. State the different strategies for water conservation.

Reducing evaporation losses; Reducing irrigation losses; Re-use of water: Preventing wastage of water; Decreasing run-off losses: Avoid discharge of sewage.

19. What are the advantages of rain water harvesting?

Increasing the availability of water from well. Rise in ground water levels.

20. What are the factors affecting watershed?

The watersheds are found to be degraded due to uncontrolled, Unplanned and unscientific land use activities; Droughty climate also affects the watershed.

21. What are the objectives of watershed management?

To minimize the risks of floods, droughts and landslides; To raise the ground water level

22. State the causes for displacement of people.

Due to developmental activities; Due to disaster; Due to conservation initiatives.

23. What is resettlement?

It is the simple relocation (or) displacement of human population.

<p>24. What is environmental ethics? It refers to the issues principles and guidelines relating to human interactions with their environment.</p>	
<p>25. What are the common objectives of Environmental Legislation? <ul style="list-style-type: none"> o To control further damage to the environment and ecosystem o To conserve the environment. o To restore the environment in areas damaged including such measures as reclamation of degradedland. o To create authorities to administer the policy and contents of the legislation. o To provide penalties and prosecution for violation of laws. </p>	
<p>26. Name some of the acts enacted by the Indian Government to protect the environment. The Water (Prevention and Control of Pollution) Act 1974 The Water (Prevention and Control of Pollution) Cases Act 1977 The Air (Prevention and Control of Pollution) Act 1981 The Environment (Protection) Act 1986 The Public Liability Insurance Act 1991</p>	
<p>27. Mention some of the Environmental Quality Objectives. Reduced climate impact, A non-toxic environment, Cleaner air, A perfect zone layer. Good quality ground water, Sustainable forests</p>	
<p>28. What is the main objective of ISO 14000 series? The main purpose of ISO 14000 series is to promote effective and efficient environmental management in organizations.</p>	
<p>29. What is the role of ISO in environmental protection? The main involvement of ISO is to develop the standards in the following areas. 1) Environmental Management System (EMS), 2) Environmental Auditing, 3) Environmental Labeling, 4) Environmental Performance Evaluation, 5) Life cycle assessment, 6) Terms and definitions</p>	
<p>30. What is the difference between normal osmosis process and reverse osmosis process? In the normal osmosis process, more dilution of concentrated solution occurs by the movement of molecules from the less concentrated side. But incase of reverse osmosis process, due to the application of high external pressure, the molecules of solution move from the more concentrated side to the less concentrated side through the semi-permeable membrane.</p>	
<p>31. Define HDI. HDI is an estimate of human resources development, as measured by three parameters – life span, literacy and standard of living. It determines the quality of life in a country.</p>	
<p>32. What is disaster? It is defined as the sudden calamity which brings misfortune and miseries to the humanity.</p>	
<p>33. What is earthquake? It is defined as sudden, violent, and shaking of part of the earth.</p>	
<p>34. What is cyclone and mention the prevention taken at the time of cyclone? <ul style="list-style-type: none"> <input type="checkbox"/> It is an area of low pressure in the centre and high pressure outside. <input type="checkbox"/> Store all the loose items inside the home <input type="checkbox"/> Fuel your car and park it under solid cover <input type="checkbox"/> Close the shutters or heavily tape all the windows <input type="checkbox"/> Disconnect all the electrical appliances <input type="checkbox"/> Turn off the gas </p>	
PART B & C	
<p>1.What are the salient features of the Air pollution Act1981 and Environment Act 1986? (APRIL/MAY 2017) Ref: “Environmental Science and Engineering” By Benny joseph, Pg.No:238</p>	
<p>2.Write short notes on Forest Conservation Act. (MAY/JUNE 2013) (APRIL/MAY 2017) Ref: “Environmental Science and Engineering” By Benny joseph, Pg.No:242</p>	
<p>3.what is green chemistry? Explain the various principles of green chemistry with suitable examples. (APRIL/MAY 2017)(MAY/JUNE 2016) Ref: “Environmental Science and Engineering” By Benny joseph, Pg.No:230</p>	
<p>4.Discuss the recent approaches to achieve sustainable development . (MAY/JUNE 2016) Ref: “Environmental Science and Engineering” By Benny joseph, Pg.No:210</p>	
<p>5.Explain the salient features of water act. (MAY/JUNE 2016) Ref: “Environmental Science and Engineering” By Benny joseph, Pg.No:237</p>	
<p>6.Name the law that have been framed for environmental protection and mention the objectives of</p>	

each act.	(APRIL/MAY 2015)
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:238</i>	
6.Explain the effects of nuclear accidents with two case studies . Discuss the various measures for wasteland reclamation	(APRIL/MAY 2015)
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:243,220</i>	
7.Discuss the issues involved in the enforcement of legislation ? Write a note on rainwater harvesting?	(APRIL/MAY 2015)
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:216</i>	
8.Discuss the phenomenon of global warming and the factors contributing to it.(NOV/DEC 2013,2015)	
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:232</i>	
9.Write an account on urban problems and detail how to solve them. (MAY/JUNE 2013)(NOV/DEC 2015)	
11.What is sustainable development and explain its concepts?	(MAY/JUNE 2013)
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:210</i>	
12.What is watershed? Discuss its objectives and its practices. Short notes on Nuclear Accidents and holocausts.	(MAY/JUNE 2013)(NOV/DEC 2013)
<i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:220</i>	

UNIT – V – HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – Environmental impact analysis (EIA)- -GIS-remote sensing-role of information technology in environment and human health – Case studies.

PART – A

1. What is value education? Give its significance. (NOV/DEC 2013)(NOV/DEC 2015) ,(APRIL/MAY 2017)

Value education is an instrument used to analyse our behavior and provide proper direction to our youths.it teaches them the distinction between right and wrong, to be compassionate,helpful,loving,generous and tolerant.so that a youth can move towards the sustainable future.

2. Mention any two welfare programs for children adopted in India. (APRIL/MAY 2017)

1. Sterilization Programme
2. IUD Programme (Intrauterine Device)

3. List out the advantages of family welfare programs?(APRIL/MAY 2015)(MAY/JUNE 2016)

To promote the adoption of small family size norm, on the basis of voluntary acceptance.

To promote the use of spacing methods.

4. Define Population explosion. (NOV/DEC 2009,2013)(APRIL/MAY 2015)(MAY/JUNE 2016)

Unprecedented growth of human population at an alarming rate is defined as population explosion. For, e.g. Between 1950-1990, in just 40 years the population crossed 5billion mark with current addition of about 92 million every year

5. Define Population explosion.?(NOV/DEC 2015)

Get tested and know your partner's HIV status. ...

Have less risky sex. ...

Use condoms. ...

Limit your number of sexual partners. ...

Get tested and treated for STDs. ...

Talk to your health care provider about pre-exposure prophylaxis (PrEP)

6. Define the term nuclear energy?(NOV/DEC 2014)

Nuclear energy is the energy in the nucleus of an atom. Atoms are the smallest particles that can break a material. ... In nuclear fission, atoms are split into smaller atoms, releasing energy. Actually, nuclear power plants can only use nuclear fission to produce electricity.

7. What are the sources of HIV infection?(NOV/DEC 2014)

HIV infection is caused by the human immunodeficiency virus. You can get HIV from contact with infected blood, semen, or vaginal fluids. Most people get the virus by having unprotected sex with someone who has HIV. Another common way of getting it is by sharing drug needles with someone who is infected with HIV.

8. What do you mean by Doubling Time? (NOV/DEC 2013)

The **doubling time** is the period of time required for a quantity to double in size or value. It is generally applied to denote the population growth.

9. Mention the ways the HIV spread in various parts of world.(MAY/JUNE 2013)

- HIV has spread in Africa through HIV contaminated polio vaccine prepared by using monkey's kidney.
- It had spread through hepatitis B viral vaccine in New York, Los Angeles and San Francisco.
- It has spread through small pox vaccine programme of Africa.

10. What is crude fertility rate?

The general fertility rate indicates the number of live born children per 1,000 women of the mean population aged 15 to 49.

11. What do you mean by Total fertility rate, Zero population growth?

- Total fertility rate is defined as the average number of children that would be born to a woman in her lifetime if the age specific birth rates remain constant.
- When birth plus immigration in a population are just equal to deaths plus emigration, it is said to be zero population growth.

12. What are the types of population growth curves?

(i) Pyramid shaped; (ii) Bell shaped & (iii) Urn shaped

13. What is meant by Life expectancy?

It is the average age that a newborn infant is expected to attain in a given country. The average life expectancy, over the globe, has risen from 40 to 65.5 years over the past century. In India, life expectancy of males and females was only 22.6 years and 23.3 years, respectively in 1900.

14. What are the post and preindustrial phases of demographic transition?

- Preindustrial phase characterized by high growth and death rates and net population growth is low.
- Post industrial phase during which zero population growth is achieved.

15. Give the reasons for human population.

- Birth rate increases with community and/or religious thinking.
- Death rate is decreasing due to high level of health care and sanitation.
- Cultural, economic, political and demographic factors influence the process of controlling rate of population growth in different countries.

16. Mention about the four phases associated with urbanization and growth.

- Pre industrial phase
- Transitional phase
- Industrial phase
- Post industrial phase

17. Define Infant mortality rate, replacement level.

- Infant mortality rate is the percentage of infants died out of those born in a year.
- Two parents bearing two children will be replaced by their offspring. But due to infant mortality this replacement level is usually changed.

18. What do you mean Demographic transition?

It has been observed that couples from economically sound nations produce fewer children so as to maintain high standard of living. This means that birth rate is low. The death rate has also been reduced in those nations because of improved health care. As a result, net population growth rate is low. This phenomenon is

called demographic transition.
<p>19. Expand WHO, CEDAW, NNWM. WHO: World health Organization, NNWM: National Network for women and Mining CEDAW: International convention on the Elimination of all forms of discrimination against Women.</p>
<p>20. What are the effects of infectious organisms on human? Microbes especially bacteria can cause food poisoning by producing toxins in the contaminated food. Infectious organisms can also cause respiratory disease (pneumonia, tuberculosis, influenza etc.) and gastrointestinal diseases (diarrhea, dysentery, cholera.)</p>
<p>21. Which state in India has the lower birth rate? Kerala has earned the distinction of having lowest birth rates among all the states of India.</p>
<p>22. When does United Nations Decade for women held? 1975-85 witnessed inclusion of several women welfare related issues on international agenda.</p>
<p>23. Mention the present world population. The world population is the total number of living humans on Earth at a given time. As of September 2008, the world's population is estimated to be about 6.7 billion (6,700,000,000).</p>
<p>24. If a nation has an annual growth rate of 2%, how many years the population will be doubled? The world's population, on its current growth strategy is expected to reach nearly 13.4 billion by the year 2075</p>
<p>25. Does HIV affect population growth? Yes, Women are especially at risk of contracting HIV because of the interplay of biological, economic, and cultural factors. Physical differences make it more likely that a woman will contract the virus from a man than vice versa. Perhaps more important, powerlessness, dependence, and poverty tend to diminish women's ability to protect themselves from unsafe sex. A woman's choices are often limited by her inability to negotiate when or with whom to have sex or whether to use a condom; by society's acceptance of men having sex before or outside marriage; and by the need for economic support from men.</p>
<p>26. What does ENVIS generates? The ENVIS centers work for generating a network of database in areas like pollution control, clean technologies, remote sensing, coastal ecology, biodiversity, Western Ghats and Eastern Ghats, environmental management, media related to environment, renewable energy, desertification, mangroves, wildlife, Himalayan ecology, mining, etc.</p>
<p>27. Explain the population clock. The world population estimates and projections used to produce these figures were developed by the International Programs Center based on analysis of available data on population, fertility, mortality, and migration. The analysis was performed separately for the 226 countries or areas of the world with a population of 5,000 or more. Population estimates and projections analyses are based on census, survey, and administrative information.</p>
<p>28. Mention the theories on population explosion. Malthusian Theory: According to Thomas Malthus in 1798, human population tends to increase at an exponential or compound rate, while food production either increases slowly or remains stable. This will result in poverty, starvation, disease, crime and misery. Marxian Theory: Karl Marx opined that slowing down of population growth and alleviation of crime, disease, starvation, misery and environmental degradation could be achieved through social justice.</p>
<p>29. What does Value-based environmental education emphasizes? Value-based environmental education imparted to the students would encourage them to undertake pro-environmental actions respecting and nurturing the natural environment. Value based environmental education can go a long way in attaining the goal of sustainable development preserving our precious environment as because it can bring about a total transformation of our mindset, attitude and mode of life-style.</p>
<p>30. When does AIDS discovered? It was confirmed in 1983 that AIDS occurs due to infection of a previously undocumented virus in a patient afflicted with the disease. This virus was initially given several names, currently it is known as Human immunodeficiency virus (HIV).</p>
<p>31. Define Human Rights. Human rights refer to the "basic rights and freedoms to which all humans are entitled. Examples of rights and freedoms which are often thought of as human rights include civil and political rights, such as the right to life and liberty, freedom of expression, and equality before the law; and social, cultural and economic rights, including the right to participate in culture, the right to food, the right to work, and the right to education. All human beings are born free and equal in dignity and rights. They are endowed with reason</p>

and conscience and should act towards one another in a spirit of brotherhood.

32. Mention the activities involved in women welfare in two lines.

Article 14 confers on men and women equal rights and opportunities in the political, economic and social spheres. Article 15 prohibits discrimination against any citizen on the grounds of religion, race, caste, sex etc. Article 15(3) makes a special provision enabling the State to make affirmative discriminations in favor of women. Similarly, Article 16 provides for equality of opportunities in matter of public appointments for all citizens.

33. What do you meant by carcinogenic, mutagenic, neurotoxins?

- **Carcinogenic:** The term carcinogen refers to any substance, radionuclide or radiation that is an agent directly involved in the promotion of cancer or in the fatation of its propagation.
- **Mutagenic:** In biology, a mutagen (Latin, literally origin of change) is a physical or chemical agent that changes the genetic information (usually DNA) of an organism and thus increases the frequency of mutations above the natural background level.
- **Neurotoxin:** A neurotoxin is a toxin that acts specifically on nerve cells (neurons), usually by interacting with membrane proteins such as ion channels.

34. What does environment education's objective?

- To help individuals, groups and societies acquire the action competence or skills of environmental citizenship - in order to be able to identify and anticipate environmental problems and work with others to resolve, minimize and prevent them
- To create an overall understanding of the impacts and effects of behaviors and lifestyles - on both the local and global environments, and on the short-term and long-term.

35. What does Draft Declaration on human rights describes?

- Articles 1 and 2 are the foundation blocks, with their principles of dignity, liberty, equality and brotherhood. The seven paragraphs of the preamble, setting out the reasons for the Declaration, are represented by the steps. The main body of the Declaration forms the four columns.
- The first column (articles 3-11) constitutes rights of the individual, such as the right to life and the prohibition of slavery.
- The second column (articles 12-17) constitutes the rights of the individual in civil and political society.
- The third column (articles 18-21) is concerned with spiritual, public and political freedoms such

36. Whether the Life expectancy over the globe has improved or not?

- There are great variations in life expectancy worldwide, mostly caused by differences in public health, medicine and nutrition from country to country.
- There are also variations between groups within single countries. Significant differences still remain in life expectancy between men and women in France and other developed countries, with women outliving men by five years or more.

37. What is Database?

A Computer Database is a structured collection of records or data that is stored in a computer system. The structure is achieved by organizing the data according to a database model. The model in most common use today is the relational model. Other models such as the hierarchical model and the network model use a more explicit representation of relationships.

38. Mention the advantages of remote sensing.

- Relatively cheap and rapid method of acquiring up-to-date information over a large geographical area. Example: Landsat 5 covers each area of 185x160km at a ground resolution of 30m every 18 days, cost of the original digital data is \$5000 (6200 ha \$-1, each hectare contains approximately 11 observations. Even with the cost of ground truthing this is very economical.
- It is the only practical way to obtain data from inaccessible regions, e.g. Antarctica, Amazonia.
- At small scales, regional phenomena which are invisible from the ground are clearly visible. Examples: faults and other geological structures. A classic example of seeing the forest instead of the trees.

PART B&C

1. Describe Environment and human health relation.

(APRIL/MAY 2017)

Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No:281

2. What do you mean by environmental impact analysis? What are the methods followed EIA?

(APRIL/MAY 2017)(MAY/JUNE 2016)

Ref: "Environmental Science and Engineering" By Benny Joseph, Pg.No:281

3. Briefly discuss HIV/AIDS, mode of its spread and its effect on environment.

(MAY/JUNE 2013)

<p>(NOV/DEC 2013)(NOV/DEC 2015)(APRIL/MAY 2015,2016),(APRIL/MAY 2017) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:280</i></p>
<p>4. Discuss women and child welfare programs practiced in India. What are the hurdles encountered. (MAY/JUNE 2016) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:286</i></p>
<p>5. What are sparsely populated areas? Give examples and reasons for poor population in those areas. (MAY/JUNE 2016) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:269</i></p>
<p>6. Write informative notes on (i) Human rights (ii) Women and child welfare (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:286</i></p>
<p>7. What are the objectives and elements of value education? How can the same be achieved? (APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:277</i></p>
<p>8. Describe the role of information technology in environment and human health. (NOV/DEC 2013,2015)(MAY/JUNE 2013)(APRIL/MAY 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:288</i></p>
<p>9. Write an explanatory note on human right and family welfare. (NOV/DEC 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:274,282</i></p>
<p>10. Give the various reasons for the population explosion.(NOV/DEC 2015) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:266</i></p>
<p>11. Explain population growth and population explosion with the various terms involved to control population. (MAY/JUNE 2013) (NOV/DEC 2013) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:267</i></p>
<p>12. Discuss Various Issues and Measures for Women and Child Welfare. (MAY/JUNE 2013) (NOV/DEC 2013) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:286</i></p>
<p>13. Write a short note on HIV and Value education?(MAY/JUNE 2013) <i>Ref: "Environmental Science and Engineering" By Benny joseph, Pg.No:280</i></p>