***INFORMATION TECHNOLOGY***



***CMR TECHNICAL CAMPUS***

**(Affiliated to J.N.T.U, HYDERABAD)**

 Kandlakoya(v),Medchal -501 401

**(2014-15)**

**COURSE FILE**

Subject: **Environmental studies**

 Year: **II– B.Tech, II SEM** Branch: **IT**

|  |  |
| --- | --- |
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**1. Mission of the Subject**: The Environmental Studies Program seeks to provide students with the literacy, skills and commitment needed to foster a healthy natural environment and to create a more sustainable, equitable and peaceful world. To these ends, this program educates and challenges students to become knowledgeable, motivated and engaged in environmental affairs. We want our students to acquire skills and awareness that will enable them to promote social justice and economic and environmental sustainability, and improve both the environment and communities.

**2. PROGRAMME EDUCATIONAL OUTCOME (PEO):**

1. The program prepares students to address environmental issues facing this region, the nation, and the world. Graduates will be able to apply a cross-disciplinary perspective to the understanding, management and remediation of the human impact on the environment.

2. The coursework provides an in-depth treatment of the current technologies for environmental protection and remediation, as well as imparting fundamental concepts of environmental biology, ecology, geology, chemistry.

3. The coursework also emphasizes environmental law, policy, and ethics to provide graduates an understanding of the social and political context surrounding environmental issues.

4.The skills for effective communication are acquired by proficiency in written, oral, visual, and graphical techniques. In addition, modern engineering tools, such computing and visualization software make communication more effective.

5. Professional and ethical responsibility, impact of engineering solutions on global and societal problems, knowledge of contemporary issues, and the understanding of professional issues help achieve an awareness of moral, ethical, legal and professional obligations to protect human health, human welfare, and the environment.

**PROGRAMME OUTCOME (PO):**

1. Students will be able to explain the basic concepts of environmental science.

a. Knowledge of the role of ecology as the basis of environmental science.
b. Knowledge of growth and regulation of human populations.
c. Knowledge of the production and utilization of resources.
d. Knowledge of human impact on the nonliving environment.

2. Students will continue to develop scientific critical thinking skills.

a. Ability to think critically in reading and analyzing environmental information in both mass media and research journal articles.

3.  Students will demonstrate the ability to articulate verbally and in writing, knowledge of    environmental science, its methodologies and issues.

 a. Ability to write in scientific format and to present research findings in oral presentations.

4. Students will develop an awareness of the impact that environmental science has had on society at large ,as well as the interactions of environmental science with other disciplines such as philosophy, literature and art.

**3. MAPPING OF COURSE/ PROGRAM OUTCOMES TO PROGRAM EDUCATIONAL OBJECTIVES**

|  |  |
| --- | --- |
|  | **Program Outcome(PO):** |
| **P****E****O****S** |  | **1** | **2** | **3** | **4** |  |
| **I** | **X** | **X** | **X** |  |  |
| **II** |  | **X** |  |  |  |
| **III** |  | **X** |  | **X** |  |
| **IV** |  | **X** | **X** |  |  |
| **V** |  | **X** | **X** | **X** |  |
|  |  |  |  |  |  |

**4. SYLLABUS COPY:**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**II Year B.Tech. IT-I SEM**

**ENVIRONMENTAL STUDIES**

**UNIT-I :**

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an

ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles,

Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

**UNIT-II:**

Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

**UNIT-III:**

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

**UNIT-IV:**

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air

Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards.

Water pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. Global Environmental Problems and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

**UNIT-V:**

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects.

Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). Towards Sustainable Future: Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

SUGGESTED TEXT BOOKS:

1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.

2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private

Ltd. New Delhi.

2. Environmental Engineering and science by Gilbert M.Masters and Wendell P. Ela .2008 PHI Learning

Pvt. Ltd.

3. Environmental Science by Daniel B.Botkin & Edward A.Keller, Wiley INDIA edition.

4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.

5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

6. **SESSION PLAN:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **JNTUH Topic** | **Objective of each Topic** | **Course Outcome** | **Practical Applications** | **Method of Teaching** |
| **UNIT – 1 ECOSYSTEM** |
| **L1** | **Definition, scope and importance of ecosystem** | **To define the term ecosystem and its importance** | **CO-1** | **Create an awareness about ecosystem** | **M1** |
| **L2** | **Concept and classification of ecosystem** | **Explanation of how ecosystem has been classified** | **Can know about different types of climate conditions and their habitat.** | **M1** |
| **L3** | **Structure and functions of ecosystems** | **Explanation of biotic and abiotic components** | **Identify differences in biotic and abiotic components.** | **M1 & M7** |
| **L4** | **Biogeochemical cycles, Homeostasis** | **To explain how carbon, nitrogen, oxygen cycles are regulated** | **Student knows how each natural cycles are interrelated and if there is any disturbance what will be the outcome.** | **M1 &M7** |
| **L5-6** | **Biomagnification, Ecosystem values and carrying capacity** | **How to conserve major ecological services and restore natural resources while meeting the socioeconomic, political and cultural needs of current and future generations** | **Can know how ecosystem is in balanced condition from past to present and future.** | **M1&M7** |
| **UNIT – 2 NATURAL RESOURCES** |
| **L 7** | **Classification of natural resources** | **Explanation of renewable and non-renewable resources classification** | **CO-2** | **Can define resources classification** | **M1&M4** |
| **L8-9** | **Water resources,Dams,Floods** | **Explanation of water composition, Dams role and their impacts.** | **Helps to understand the importance of water and role of dams.** | **M1**  |
| **L10** | **Mineral resources-mining and its impacts** | **Explanation of Mining process and its impacts**  | **Student can know better how mining is done and also about open cast and underground mining.** | **M1**  |
| **L11-13** | **Energy resources-renewable and non-renewable** | **Explanation of list of Renewable and Non-renewable energy resources and their regeneration time.** | **Highlights the importance of Renewable and Non- renewable energy resources.** | **M1 & M7** |
| **L14** | **Land resources** | **Forest resources** | **Helps to understand importance of forest resources** | **M1&M7** |
| **UNIT – 3 BIODIVERSITY AND BIOTIC RESOURCES** |
| **L15-16** | **Definition of species,genetic,ecosystem biodiversity** | **Explanation of different types of bio-diversity.** | **CO-3** | **Can moves us to appreciate how different species have been designed.** | **M1** |
| **L-17-18** | **Values of biodiversity** | **Explanation of 5 different values of bio-diversity.** | **Identify different values of bio-diversity.** | **M1** |
| **L19-20** | **Hotspots of biodiversity and threats to biodiversity** | **Defining the term Hot-spot and Explaining different threats to bio-diversity.**  | **Encourages us to how to overcome poaching and protect heritage of the country.** | **M1,M4&M7** |
| **L21-22** |  **Conservation of biodiversity –in-situ and ex-situ conservation** | **Explanation of how to conserve bio-diversity.** | **Gives idea about National parks ,seed banks, cryopreservation techniques in protecting bio-diversity.** | **M1&M7** |
| **L 23** | **National Bio-diversity act** | **Importance of protecting species** | **Can know the role of acts in protecting species** | **M1&M7** |
| **UNIT – 4 ENVIRONMENTAL POLLUTION AND CONTROL TECHNOLOGIES** |
| **L 24-25** | **Classification of pollutants –primary and secondary pollutants** | **To define the term pollutant and explain primary and secondary pollutants.** | **CO-4** | **Can know the difference of primary and secondary pollutants.** | **M1&M7** |
| **L26** | **Ambient air quality standards** | **Explanation of what is meant by ambient air quality standards and their standards.** | **Can study the standards for ambient air quality standards.** | **M1** |
| **L27** | **Water pollution – point and non-point sources** | **Explanation of point and non-point source pollution** | **Can help us to take some practical steps to overcome water pollution.** | **M1** |
| **L28** | **Waste water treatments methods** | **Explanation of different treatments plants for waste water.** | **Helps to understand the role of industries in treatment of sewage water.** | **M1** |
| **L29** | **Soil pollution – impacts of modern agriculture on soil** | **Explanation of how modern day agricultural practices showing impacts on soil resources.** | **It encourages us to use organic material rather than chemical fertilizers.** | **M1** |
| **L30** | **Noise pollution – methods to control noise** | **Explanation of how noise pollution is caused and its preventive measures.** | **Can suggest some preventive methods to prevent noise pollution.** | **M1** |
| **L31** | **Solid waste management- disposal 3R principle** | **Explanation of solid waste management.** | **Highlights the importance of e-waste management** | **M1** |
| **L32** | **Green house effect, Green house gases list** | **To identify the factors responsible for green house effect.** | **CO-4** | **Can list the green house gases and their GWP values .** | **M1&M7** |
| **L33-34** | **Kyoto protocol, montreal protocol** | **To know how different protocols contributing towards reducing global warming.** | **Can get better idea about different countries supporting protocols.** | **M1,M4&M7** |
| **L35** | **Earth summit** | **Explanation of Earth summit.** | **Can get better idea about different countries supporting protocols.** | **M1** |
| **UNIT – 5 ENVIRONMENTAL POLICY, LEGISLATION AND EIA** |
|  |
| **L36** | **Air act 1981** | **Explanation of Air act.**  |  | **Knows better the rules and regulations of Air act and their sections.** | **M4** |
| **L37** | **Water act 1974** | **Explanation of Water act.** | **Knows better the rules and regulations of Water act and their sections.** | **M1** |
| **L38** | **EPA and Forest act** | **Explanation of EPA and Forest act.** | **Knows better the rules and regulations of Forest act and their sections.** | **M1 & M2** |
| **L39** | **Municipal solid waste management rules** | **Explanation of Municipal solid waste management rules** | **Knows better the rules and regulations of Municipal solid waste management and their functions.** | **M1** |
|  |  |  |  |  |  |
| **L40** | **Biomedical hazardous management** | **Explanation of Biomedical hazardous management** | **CO-5** | **Knows better the rules and regulations of bio-medical waste management and their functions.** | **M1&M7** |
| **L41** | **Hazardous waste management** | **Explanation of Hazardous waste management** | **CO-5** | **Knows better the rules and regulations of hazardous waste management and their functions.** | **M1&M7** |
| **L42** | **Classification of impacts** | **Classification of different types of impacts.** |  | **Easy to identify how impacts takes place.** | **M1** |
| **L43** | **Environmental impact assessment flow chart** | **Explanation of how EIA can be done.** |  | **Can draw the EIA flow chart.** | **M1,M4&M7** |
| **L44** | **Environmental management plan** | **Explanation of Environmental management plan.** |  | **Involves working principle of EMP** | **M1** |
| **L45-46** | **Strategies for risk assessment** | **How risk assessment will be done** |  | **Can how the process of risk assessment takes place**  | **M1** |
| **L47** | **Concept of sustainability** | **Explanation of sustainability concept.** |  | **Suggests us on how we can use wisely the resources which can be useful to coming generations.** | **M1 & M7** |
| **L48** | **Crazy consumerism, Over exploitation of resources** | **Explanation of role of consumers-decisions while purchasing.** |  | **Suggests some better ideas on the things what we purchase.** | **M1** |
| **L49** | **Urban sprawl,Human health** | **Explanation of urban population increase and human health.** | **CO-5** | **Can the demands in urban areas and their limitations.** | **M1** |
| **L50** | **Green building Concept** | **Explanation of green building rating.** | **Gives some practical ideas on how a green building can be constructed.** | **M1 & M7** |
| **L51** | **Ecological foot print life** |  **To teach how our choices affect the environment**  | **Useful to take choices with discernment** | **M1&M2** |
| **L52-53** | **Life cycle assessment`** | **Technique to access the environmental aspects and potential impacts associated with a product.** | **Can be useful to think impacts carefully starting from beginning to ending of product, process etc** | **M1** |
| **L54** | **Low carbon life style** | **Importance of reducing co2.** | **Various practical methods to reduce carbon** | **M1&M2** |

**METHODS OF TEACHING:**

|  |  |
| --- | --- |
| **M1 : Lecture Method** | **M6 : Tutorial**  |
| **M2 : Demo Method** | **M7 : Assignment**  |
| **M3 : Guest Lecture**  | **M8 : Industry Visit**  |
| **M4 : Presentation /PPT** | **M9 : Project Based**  |
| **M5 : Lab/Practical**  | **M10 : Charts / OHP**  |

**COURSE OUTCOMES:**

|  |  |
| --- | --- |
| **CO-1** | Understands the scope and importance of Ecosystem. It explains the multidisciplinary nature of Environmental studiesAnd explains the need of public awareness for protection of Environment. |
| **CO-2** | Explain the difference between Renewable and Non renewable energy resources. Describes the effects of mineral extraction on the environment, Enumerate the applications of Solar energy in modern day applications, Explain the need for water conservation and the various ways in which energy from oceans can be extracted. |
| **CO-3** | Define Bio-diversity and its conservation, Explain poaching of wildlife and different values of bio-diversity. |
| **CO-4** | Describe the effects of air pollution on human health, Measures to control air pollution. It describe the nature and man-made pollutants that cause pollution, Working process of Waste water treatment. Can learn different types of pollution and their case studies, also discuss the contribution of Green house gases to global warming, Different International protocols to overcome global problems. |
| **CO-5** | Discuss various Acts implemented and also describes the Government organizations and dept’s responsible for the protection of Environment. Discuss EIA importance and its concept, EIA methodologies to evaluate the impacts. What is the importance role of Life cycle assessment and ecological foot print estimation. |

7. **DETAILED LECTURE PLAN:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **Topic (JNTU syllabus)** | **Sub-Topic** | **NO. OF LECTURES REQUIRED** | **Suggested Books** | **Remarks** |
| **01** | **ECOSYSTEM** | **UNIT - I** |  |  |  |
|  | Definition, scope and importance of ecosystem | **L1** | **R4** |  |
|  | Concept and classification of ecosystem | **L2** | **R1** |  |
|  | Structure and functions of ecosystems | **L3** | **R4** |  |
|  | Biogeochemical cycles, Homeostasis | **L4** | **T1** |  |
|  | Biomagnification,Ecosystem values and carrying capacity | **L5-6** | **R4** |  |
| **02**  |  |  **UNIT - II** |  |  |  |
|  | **NATURAL RESOURCES** | Classification of natural resources | **L 7** | **R4** |  |
|  | Water resources,Dams,Floods | **L8-9** | **T1** |  |
|  | Mineral resources-mining and its impacts | **L10** | **T1** |  |
|  | Energy resources-renewable and non-renewable | **L11-13** | **R2** |  |
|  |  | Landresources-Forest resources | **L14-15** | **R4** |  |
| **03** |  |  **UNIT - III** |  |  |  |
|  | **BIODIVERSITY AND BIOTIC RESOURCES** | Definition of species,genetic,ecosystem biodiversity | **L15** | **T1,R4** |  |
|  | Values of biodiversity | **L16-17** | **T1** |  |
|  | Hotspots of biodiversity and threats to biodiversity | **L18-20** | **T1,R4** |  |
|  | Conservation of biodiversity –in-situ and ex-situ conservation | **L22-24** | **R4** |  |
|  | National Biodiversity act | **L25** | **R1** |  |
| **04** |  |  **UNIT -IV** |  |  |  |
|  | **ENVIRONMENTAL POLLUTION****AND CONTROLTECHNOLOGIES** | Classification of pollutants –primary and secondary pollutants | **L26-27** | **T1** |  |
|  | Ambient air quality standards | **L28** | **R4** |  |
|  | Water pollution – point and non-point sources | **L29** | **T1,T2** |  |
|  | Waste water treatments methods | **L30** | **R4** |  |
|  | Soil pollution – impacts of modern agriculture on soil | **L31** | **T1,T2** |  |
|  | Noise pollution – methods to control noise | **L32** | **R4** |  |
|  | Solid waste management- disposal 3R principle, e-waste management | **L33** | **T1,T2** |  |
|  | Waste water treatment methods. | **L34** | **T1** |  |
|  | Concept of bio-remediation, Green house effect, Green house gases list | **L35-36** | **T1** |  |
|  | Kyoto protocol, Montreal protocol | **L-37** | **T2** |  |
| **05** |  | Earth summit  | **L-38** |  |  |
|  | **ENVIRONMENTAL POLICY,LEGISLATION AND EIA** | **UNIT-V** |  |  |  |
|  | Air act 1981 | **L39** | **R1** |  |
|  | Water act 1974 | **L40** | **R1** |  |
|  |  | EPA and Forest act  | **L41** | **R1** |  |
|  | **ENVIRONMENTAL POLICY,LEGISLATION AND EIA** | Municipal solid waste management rules | **L42** | **R1** |  |
|  | Biomedical hazardous management | **L43** | **R1** |  |
|  | Hazardous waste management | **L44** | **R1** |  |
|  | Classification of impacts | **L45-46** | **R1&R3** |  |
|  | Environmental impact assessment flow chart | **L47** | **R1&R3** |  |
|  | Environmental management plan | **L48** | **R1&R3** |  |
|  | **ENVIRONMENTAL POLICY,LEGISLATION AND EIA****ENVIRONMENTAL POLICY,LEGISLATION AND EIA** | Risk management | **L49** | **R3** |  |
|  | Concept of sustainability | **L50** | **R4** |  |
|  | Crazy consumerism, Over exploitation of resources | **L51** | **R4** |  |
|  | Urban sprawl, Human health | **L52** | **R4** |  |
|  | Environmental ethics and education | **L53-54** | **R4** |  |
|  | Green building Concept | **L55** | **R4** |  |
|  | Ecological foot print | **L56** | **R3** |  |
|  | Life cycle assessment | **L57** | **R3** |  |
|  | Low carbon life style. | **L58** | **R3** |  |

1. **Session Execution Log**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Slno** | **Unit** | **Scheduled Completion date** | **Actual Completed Date**  | **Remarks**  |
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9. **ASSIGNMENT QUESTIONS:**

**Assignment questions:**

1)Write about mineral resources?

2)What are the threats to biodiversity?

3)What are consumptive values and productive use values?

 4)Write about Tidal energy ?

5) What is meant by food chain and food web ?

6)Write about renewable energy resources by taking any 3 examples ?

 7)What is Global Warming and list out green house gases along with their GWP values?

 8) Explain briefly about Kyoto Protocol?

 9 a. Explain EIA with help of neat flow chart?

 b. Write objectives of Montreal Protocol.

 c. Expand IPCC.

10) Write about Hazardous Waste management and specify color coding for different bio-medical containers.

11) a. Write about threats to sustainability.

 b. Green building ratings.

12)Write briefly about Bio-medical Waste Management

 b) Write specific colour coding containers for bio-medical waste.

 (c)Draw symbols to identify bio-medical waste.

13)(a) Write any two threats for sustainability – briefly.

 (b) Expand- TERI, UNFCCC, GRIHA, LEED, IGBC, and BEE. (c) Green building ratings list.

 (d) Name the person who was honoured with the prestigious *Magsaysay award* for his work on rain water harvesting

14 A) Explain about Green house effect? Discuss the various green house gases in terms of their potential to global warming?

 B) Write in detail about Kyoto protocol.

 15) A)Explain in detail regarding the stages involved in EIA( Environmental Impact Assement)

 B)Draw network diagram by taking an example of ROAD CONSTRUCTION PROJECT

16) A) Write in detail about Bio –medical waste management and handling rules?

 B) Write about Water act 1974 in detail

17) A) Write about concept of Sustainability? Human development index?

 B) Write about obstacles for achieving sustainability?

 18) A)Write about Energy demands in urban areas?

 B) Crazy consumerism?

19) Write in detail about Bio –medical waste management and handling rules?

 B)Write about Sec 24,47,48 of water act 1974?

 C) Explain procedure for importing and exporting hazardous waste ?

 20) A) Write about concept of Sustainability?

 B) Urban sprawl?

 21) A) Write about Energy demands in urban areas?

 B)Clean development mechanism?

1. Explain Carbon Cycle and Phosporus Cycle with the help of neat diagrams?
2. What is Mining? Write about Open cast mining and its impacts?
3. Write about Non-Timber Forest Products?
4. Write about the different causes for Coastal pollution?
5. Biomagnification?
6. Bio-mass energy?
7. Timber and Non-Timber Forest Products?
8. Primary pollutants?
9. Aesthetic Value of Biodiversity?
10. **Sample Assignment Scripts :** (To be attached)
11. **Unit Wise Course material: (attached)**
12. **Mid Question papers:** (To be attached)
13. **Mid & Quiz exam marks** (To be attached)
14. **List of slow learners** (To be attached)
15. **Remedial classes schedule for slow learners** (To be attached)
16. **Subject wise (attendance monthly)** (to be attached)
17. **Slow learner’s attendance** (To be attached)
18. **Sample mid answer scripts** (To be attached)
19. **Slow learner’s performance in mid questions** (To be attached)
20. **Result analysis** (To be attached)
21. **Material collected from Internet/Websites (**Attached)
22. **Power point presentations** (Attached )

23. Previous year question papers:

**UNIT - I**

1. What is bio-sphere? (JNTUH- Dec 2011)
2. Write different types of eco-systems with diagram(JNTUH- Dec 2011)
3. What is phosphorus cycle? (JNTUH- Dec 2011)
4. Explain about Hydrological cycle with the help of neat diagram? (JNTUH- Dec 2011)
5. Write the definition of ecosystem? (JNTUH- Dec 2011)
6. Explain about different ecological pyramids with the help of neat diagrams? (JNTUH- May&Dec 2012)
7. Write about pond ecosystem with the help of neat diagram(JNTUH-May 2012)
8. What is cybernetics(JNTUH-May 2012)

**UNIT –II**

1. Explain about Renewable energy resources(JNTUH May 2012)
2. Explain about deforestation(JNTUH May 2012)
3. Write about mineral resources and its effects on human health and environment?
4. Write about Forest resources in detail.

**UNIT –III**

1. Write about In-Situ Conservation of biodiversity( JNTUH-Dec 2011)
2. Explain about Aesthetic Value of biodiversity? ( JNTUH-Dec 2011)
3. Explain about importance of biodiversity? ( JNTUH-Dec 2011)
4. Productive Use value of biodiversity? ( JNTUH-Dec 2011)
5. Explain about Consumptive Use Value of biodiversity? ( JNTUH-Dec 2011)
6. Explain about Genetic Diversity? ( JNTUH-Dec 2011)

**UNIT-IV**

1. Write about Impacts of Fertilizers on Soil?(JNTUH-Dec 2011)
2. How to control the noise pollution?(JNTUH-May 2012)
3. What are the secondary pollutants? ( JNTUH-May 2012)
4. What are the pollutants emitted from automobile pollution?(JNTUH-May 2012)
5. Give ISO Drinking standards of water?(JNTUH-May 2012)
6. Write about Coastal pollution?(JNTUH-May 2012)
7. Write about E-waste management?(JNTUH-Dec 2011)
8. Explain the changes likely to occur in annual temperature and precipitation as a result of global warming? (JNTUH-Dec 2011)
9. What is green house effect?(JNTUH-Dec 2011)
10. What are the adjustments to be considered for potential global warming?(JNTUH-Dec 2011)
11. Explain about Kyoto Protocol?(JNTUH-May 2012)
12. How CFC’S can deplete ozone and explain with the help of chemical reaction?(JNTUH-May 2012)
13. How human activities has resulted in increased emissions of green house gases?(JNTUH-May 2012)
14. What is an anthropogenic green house gas? Discuss the various anthropogenic green house gases in terms of their potential to cause global warming?(JNTUH-May 2012)
15. Explain how the green house effect works?(JNTUH-May 2012)
16. Explain the science of global warming?(JNTUH-May 2012)
17. Explain about Montreal protocol?(JNTUH-May 2013)

**UNIT –V**

 1.(a) How is environment defined under the law?

 (b) What is the reason that every person should know the law? (JNTUH-Dec 2011)

 2. What are the current requirements that should be met before declaring an area in to a wild life

 sanctuary or a national park under the forest act?(JNTUH-Dec 2011)

1. Can companies and governments departments can also be prosecuted under the air act?(JNTUH-Dec 2011)
2. What is the importance of section 24 of that water act 1974?(JNTUH-May 2012)
3. What restriction thus in water act impose on private citizen with respect to courts taking cognizance of offences under the water act?(JNTUH-May 2012)
4. How are terms Environment, Environmental pollutant, Environmental pollution and Hazardous substances define under E.P.A 1986?(JNTUH-May 2012)
5. What are the responsibilities of occupier/generators according to hazardous waste rules 1989?(JNTUH-May 2012)
6. Write about Environmental protection Management plan?(May 2012)
7. Write about Bio-medical waste management and handling rules 1998?(JNTUH-May 2011)
8. Explain about the collection of municipal solid waste?(JNTUH-Dec 2011)
9. Explain about salient features of matrices methods for carrying out EIA?(JNTUH-Dec 2011)
10. How to carry out impact assessment study on vegetation and wild life?(JNTUH-Dec 2011)
11. How GIS and Remote sensing methods are useful in EIA?(JNTUH-Dec 2011)
12. Write the definition of EIA and explain the scope of EIA?(JNTH-May 2012)
13. Explain how to minimize the environment impact of mineral development?(JNTUH-May 2012)
14. Explain about Ad-hoc method to carry out EIA?(JNTUH-May 2012)
15. Explain about systematic approach for the study of the soil and ground water environmental impacts?(JNTUH-May 2012)
16. (a) Explain how an EIA can be used as a planning tool for major project activities?

(b) Write about the systematic approach for using EIA as a planning tool for project activity?

(c)Write about the essential steps to complete an environmental impact assessment?

(d) Explain about draft and final environment statement? (JNTUH-May 2012)

 19. Explain about the criteria for the selection of EIA methodology? (JNTUH- May 2012)

20. Write the concept of sustainable development? (JNTUH-Dec 2011)

 21. Give the guidelines of sustainable development? (JNTUH-Dec 2011)

22. Explain the items of consumerism and their impacts on man or society/(JNTUH-May 2012)

23. Explain about urban housing problems? (JNTUH-May 2012)

24. Explain about Carbon credit system? (JNTUH-May 2012)

25. What are the threats to achieve sustainability? (JNTUH-May 2012, 2013)

24. Websites:

 1. [http://moef.nic.in](http://moef.nic.in/)

 2. [http://unfccc.int](http://unfccc.int/)

 3. <http://www.neeri.res.in/>

 4. <http://envis.neeri.res.in/>

 5. <http://www.sacon.in/>

 6. <http://www.inwea.org/>

 7. [http://www.epa.gov](http://www.epa.gov/)

 8. <http://www.weee-forum.org/>

 9. <http://www.ghgprotocol.org/>

 10. [http://www.appcb.ap.nic.in](http://www.appcb.ap.nic.in/)

 11. <http://www.bnhs.org/>

 12. <http://www.cseindia.org/>

 13. [www.bsi.gov.in/](http://www.bsi.gov.in/)

 14. <http://zsi.gov.in/>

 15. <http://www.fsi.nic.in>

 16. <http://www.icfre.gov.in>

 17. <http://www.iirs-nrsa.gov.in>

 18. <http://www.nmnh.nic.in>

 19. <http://www.nhm.ac.uk>

 20. <http://www.wii.gov.in>

 21. <http://zsilibraries.nic.in>