Reg. No. : E N G G T R E E . C O M

Question Paper Code : R 51228

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fourth Semester

Civil Engineering

GE 3451 – ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

(Common to all branches (Except Environmental Engineering))

(Regulations 2021)

(Also common to PTGE 3451 – Environmental Sciences and Sustainability for B.E.(Part-Time) First Semester – Electrical and Electronics Engineering / Electronics and Communication Engineering – Regulations – 2023)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define ecosystem.
2. Mention any two threats to biodiversity.
3. What is soil pollution?
4. Give any two methods for solid waste management.
5. Mention any two applications of hydrogen energy.
6. Give two ways for energy conservation.
7. Define carbon footprint.
8. Mention any two sustainability goals.
9. What is environmental impact assessment?
10. Define energy efficiency.

PART B — (5 × 13 = 65 marks)

11. (a) Ecosystem is dynamic in nature where even a bare land can turn into a forest. Justify by explaining the steps involved in the succession of a lifeless bare land into self-dependent forest ecosystem. Support your answer with an example mentioning the different steps clearly.

Or

(b) Biodiversity is a precious gift which needs to be conserved. Justify the statement by explaining any three important values of biodiversity and two methods of conservation of biodiversity.

12. (a) Air and water are essential natural resources required for our survival which are getting increasingly polluted. Explain any two causes, effects and control measures at source for each of them.

Or

(b) Briefly discuss any two methods for hazardous waste management. Discuss the salient features, drawbacks and amendments of the acts for protecting wildlife and forests.

13. (a) Energy demand increases with population. Explain the principle and various steps involved in energy management and conservation that can lead to sustainability.

Or

(b) The internal thermal energy of earth can be used to generate electrical energy. Justify by explaining the various types of geothermal power plants. Bring out any two advantages and disadvantages of geothermal energy.

14. (a) Explain how GDP can be modified into an indicator for sustainability. Mention any three ways to make a transition from unsustainability to sustainability. Describe the target, indicators and intervention areas of any four sustainable development goals.

Or

(b) With the help of case studies, explain any two regional environmental issues with possible solutions. Bring out the differences between carbon footprint and carbon credit.

15. (a) Explain how zero waste, 'R' concept and circular economy are related to each other. Describe the importance of ISO14000 series with two examples. Briefly describe the steps involved in environmental impact assessment.

Or

(b) Discuss the carbon cycle with a neat diagram. As CO_2 in the atmosphere cause global warming, it has to be sequestrated. Explain the different ways of carbon sequestration. Mention any three ways for sustainable urbanization.

PART C — (1 × 15 = 15 marks)

16. (a) A construction company has to take care of the safety of its employees along with providing a healthy environment to work. Describe any two safety and health issues which the company has to address. Suggest the steps involved in ensuring a safe and healthy work place along with a case study.

Or

(b) Green buildings are essential for environmental sustainability. Justify by giving any five key features of green buildings. Industries have a big role to play in achieving environmental sustainability. Explain environmental management in industries with a detailed case study.

Reg. No. : E N G G T R E E . C O M

Question Paper Code : 21188

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fourth Semester

Civil Engineering

GE 3451 — ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

(Common to All branches)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is ecological succession?
2. List out the effect of habitat loss on biodiversity.
3. Mention the sources responsible for water pollution.
4. What is composting?
5. Distinguish between renewable and non-renewable energy sources.
6. What is a solar cell?
7. Define sustainable development.
8. Enumerate the concept of carbon credit.
9. What are the stages of a life cycle assessment LCA?
10. What are the benefits of environmental impact assessment?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the structure and function of an ecosystem. Discuss the models of energy flow in an ecosystem.

Or

(b) What are hotspots of biodiversity? Which are the hotspots found in India? Discuss their salient features.

12. (a) What are the impacts of noise on human beings? Explain the various control measures for noise pollution.

Or

(b) What are the major sources of soil pollution? How does soil pollution affect soil productivity? What measures can be taken to control soil pollution?

13. (a) How can electricity be produced from tides and waves? What is the potential of these energy resources?

Or

(b) Compare the various types of energy with respect to its sustainability for Indian conditions.

14. (a) What do you mean by sustainable development and how will you attain the sustainability?

Or

(b) What is the concept of carbon credit and how it originated? How is carbon credit calculated? How does buying carbon credits reduce pollution?

15. (a) Enumerate and explain the various methods of carbon capture and sequestration.

Or

(b) What is the importance of sustainable urbanization? Explain the components of sustainable urban development.

PART C — (1 × 15 = 15 marks)

16. (a) How can you, as a individual to prevent environmental pollution? Why such an effort at individual level is important?

Or

(b) Identify and explain the present day major threats to the biodiversity of India. Explain the major in-situ strategies of conservation of biodiversity.
