Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 41522

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2024.

Seventh Semester

Civil Engineering

OCH 353 – ENERGY TECHNOLOGY

(Common to : Aeronautical Engineering/Aerospace Engineering/Automobile Engineering/Biomedical Engineering/Computer Science and Design/Computer Science and Engineering/Computer Science and Engineering (Artificial Intelligence and Machine Learning)/Computer Science and Engineering (Cyber Security)/Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/Environmental Engineering/Geoinformatics Engineering/Industrial Engineering/Industrial Engineering and Management/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Materials science and Engineering/Mechanical Engineering/Mechanical and Automation Engineering/Mechartonics Engineering/Medical Electronics/Petrochemical Engineering/Production Engineering/Robotics and Automation/Safety and Fire Engineering/Agricultural Engineering/Artificial Intelligence and Data Science/Bio Technology/Biotechnology and Biochemical Engineering/Computer Science and Business Systems/Fashion Technology/Food Technology/Handloom and Textile Technology/Information Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical Technology/Plastic Technology/Textile Chemistry/Textile Technology)

(Regulations 2021)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different units of energy?

2. What are the causes of energy crisis?

3. Classify the turbines used in hydroelectric power plants.

4. List the inevitable drawbacks of nuclear energy production.

5. What is ocean wave energy and state its advantages.

6. Define Geothermal Energy.

7. Give some of the organic materials used in biomass energy plants.

8. Write the typical composition of bio-gases.

9. What is meant by Energy- Benchmarking?

10. Write the basic principle of energy balance.

PART B — (5 × 13 = 65 marks)

11. (a) Define and discuss the various forms of energy in detail with its common units.

Or

(b) Discuss the "Indian Energy Scenario" in terms of energy production and its consumption.

12. (a) What is modern steam power station? Draw the schematic diagram of the same and explain its operation.

Or

(b) Classify the various types of nuclear reactors and explain the functioning of any one nuclear reactor.

13. (a) Categorize and explain the various types of rotors used in wind turbine mills.

Or

(b) What are Ocean thermal energy conversion (OTEC) systems? Explain its functioning in detail.

14. (a) Briefly discuss the thermochemical and biochemical methods of biomass energy conversion.

Or

(b) Discuss the basic steps involved in biogas generation from biomass.

15. (a) What is meant by energy conservation? Discuss the different strategies followed in chemical processing plants to conserve the energy.

Or

(b) Explain the various types of energy audits in detail.

PART C — (1 × 15 = 15 marks)

16. (a) With neat sketches, explain the basic layout, components and working of a coal fired thermal power plant.

Or

(b) Classify the different types of solar collectors and explain the functioning of any one solar collector in detail.

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