



Energy Conservation and Management (1722104)

Interdisciplinary Elective - II

LIST OF TUTORIALS

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| 1 | | Energy Scenario and Techniques for Energy Conservation | | | |
| 2 | | Thermal Performance and Heating-Cooling load Calculation of a Building | | | |
| 3 | | Energy Audit and Energy Information System | | | |
| 4 | | Importance and Role of Energy Management, Computer Controlled Management and Energy Management Programme | | | |
| 5 | | Importance of Energy Economics and Life Cycle Costing | | | |
| 6 | | Co-generation of Process and Co-Generation of Steam and Electricity | | | |
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| 8 | | Energy Conservation and Energy Management in power plant | | | |
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Tutorial No.1

Energy Scenario and Techniques for Energy Conservation

1. Define Work, Power and Energy. Give unit of Each.
2. Why energy conservation is important in the prevailing energy scenario?
3. Briefly explain energy scenario in India. **OR** Discuss the current energy scenario of India.
4. Discuss present energy scenario in Gujarat
5. Explain the principles of energy conservation **OR** Discuss various methods of energy conservation
6. What are the economic impacts of energy conservation?
7. Briefly explain conservation of commercial energy sources
8. List down the various energy conservation opportunities available in a steam system?
9. What are the potentially available resources of energy?
10. Discuss the energy consumption pattern.
11. How is economic growth linked to energy consumption?
12. Write a note on energy efficient machines. **OR** Briefly explain energy efficient equipment.



Tutorial No.2

Thermal Performance and Heating-Cooling

Load Calculation of a Building

1. Write Various Ways to Conserve Energy in Residential Buildings, Hospitals and Industries
2. Which are the four basic loads considering for Heat gain/ Heat loss calculation? Explain also.
3. Briefly Explain various factors affecting thermal performance of building
4. Explain general procedure for cooling load calculation. **OR** How is annual heating and cooling load factors calculated?



Tutorial No.3

Energy Audit and Energy Information System

1. What is an Energy Audit? Write Difference between Preliminary & Detailed Energy Audits
2. What is the importance of Energy Audit?
3. Explain steps in Energy Audit **OR** discuss various steps of energy audit
4. Layout general procedure in Energy Audit.
5. Why energy audit is requiring?
6. Why instruments are required for Energy Audit? Please give brief details of six Energy Audit instruments
7. Indicate where the retrofit can play a role in an industrial facility & how?
8. Briefly explain the importance of “energy information systems” in energy action planning.
9. Explain the role of Energy information system.
10. Discuss computer control energy management.
11. List all the requirements of energy action planning?



Tutorial No.4

Importance and Role of Energy Management, Computer Controlled Management and Energy Management Programme

1. What is energy management? How it helps in solving problems of energy crisis?
2. What are various energy management techniques?
3. Discuss electricity saving techniques by category of end use.
4. What are the factors influencing energy management program?
5. How energy and power management is done in industry?
6. Explain demand management
7. Explain Energy Management Strategies for Industries with suitable examples



Tutorial No.5

Importance of Energy Economics and Life Cycle Costing

1. Explain energy Economics
2. Explain payback period for energy conservation
3. Explain life cycle costing
4. Write note on 1.Internal rate of return 2.Life cycle costing.
5. What is the importance and role of energy management?



Tutorial No.6

Co-generation of Process and Co-Generation of Steam and Electricity

1. What are the advantages of co-generation power plant?
2. Explain co-generation systems.
3. Explain with neat sketch Co-generation system. Discuss its advantages.
4. Mention three circumstances, where co-generation is likely to be most attractive.
5. List out electrical energy parameters required while carrying out cogeneration system performance evaluation
6. Explain how power factor improvement helps to save energy.
7. Discuss various measures to be taken for reducing electric energy transmission losses



Tutorial No.7

Importance of Non-Conventional Energy Sources in Energy Conservation

1. With help of neat sketch explain working of Floating Dom-KVIC Biogas plant
OR With neat sketch explain Biogas plant
2. Discuss Solar Energy
3. Discuss Wind Energy – As source of Energy.
4. Explain Tidal power plant
5. Discuss advantages of renewable energy sources.
6. Discuss Ocean Thermal Energy Conversion (O.T.E.C.) plant
7. Explain method to capture wind energy to get electricity.
8. What is the necessity of energy storage? **OR** Why energy storage is required?
9. What are the different methods of energy storage? **OR** State the types of energy storage and explain any one.
10. Explain compressed air energy storage (C.A.E.S.)
11. Discuss solar energy storage methods
12. Explain how Green House concept saves energy **OR** Explain Green house concept



Tutorial No.8

Energy Conservation and Energy Management in power plant

1. What is the function of 'back pressure steam turbine'?
2. Explain working of Back pressure steam turbine
3. What are the advantages of Diesel Generator set for power generation?
4. What are the advantages of Hydro Power Plant?
5. Explain pass out steam turbine
6. Discuss different methods used to improve the performance of Thermal Power Plants. **OR** State and explain various efficiency improvement methods used in thermal power plant
7. Explain fluidized bed combustion (F.B.C.) and discuss importance of air fuel ratio
8. Explain with neat sketch various methods used for combustion of pulverized coal
9. Explain fluidized bed combustion and discuss its advantages.
10. With neat sketch explain working of "Cyclone Burner".