

B. Tech 7th Semester Examination
Energy Management (NS)
EE-411(a)

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question from each sections A, B, C and D. Section E is compulsory.

SECTION - A

1. (a) Differentiate between renewable and non-renewable sources. Give examples of both types. What is the use of non-conventional energy sources in present day situation of energy crisis? (4+2+4=10)
- (b) How can electrical energy be generated using following resources:
(i) magneto hydro source (ii) Geothermal (iii) Ocean
(iv) Tidal (2½×4=10)
2. (a) Explain the energy scenario of India as compared to the world energy scenario of present day. (10)
- (b) Explain any one method with neat diagram of generating electrical energy from solar energy. (10)

SECTION - B

3. What is energy management? How is it different from Energy Conservation? What are different types of energy management techniques? What are the points to be kept in mind while designing a energy management system for an educational institute? (4+4+8+4=20)
4. What are the ways in which energy can be conserved in following fields:
(i) Agriculture (ii) Homes (iii) Industry (iv) Commercial spaces
(5+5+5+5=20)

SECTION - C

5. What are energy efficient devices? How are they different from the conventional devices? Show using examples that in long term usage of energy efficient devices is beneficial to the person using these devices. (3+5+12=20)
6. Explain any two instrumentation schemes for measuring and controlling electrical energy which can be used for energy efficient systems. (10+10=20)

SECTION - D

7. Distinguish between preliminary and final energy audit. What are the points one should keep in mind while doing the secondary energy audit? List the instruments (atleast five) used for energy audit. (7+8+5=20)
8. Why the industries are required to maintain power factor? What are the effects of poor power factor on electrical system? How can the power factor be improved? (4+8+8=20)

SECTION - E

9. Answer briefly:
 - (i) Define non conventional sources of energy.
 - (ii) What is energy conservation?
 - (iii) Define an energy efficient system
 - (iv) List methods for final energy audit.
 - (v) Define power factor.
 - (vi) What parameters that a on line power analyzer can measure?
 - (vii) Does training help in promoting energy conservation? How?
 - (viii) What is importance of energy management system to an industry?
 - (ix) List the ways to generate electrical energy from tidal energy.
 - (x) Name two devices/components which may be used to improve power factor. (10×2=20)

- (b) What are criteria for hydro thermal load sharing in a power system? State with the help of a load duration curve.
(10)
8. (a) Explain the computer based data acquisition system for a power plant operation with a suitable block diagram.
(10)
- (b) State the functioning of load dispatch centre in a grid connected power system.
(10)

SECTION - E

9. (a) State the function of voltage transformers in a power plant.
- (b) Define dependability and its significance in design of hydro power plant.
- (c) State the nuclear fission process.
- (d) State the function of an electrostatic precipitator in a thermal power plant.
- (e) State the existing HVDC transmission systems in India.
(4×5=20)