

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

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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 total selecting one question from each of the section A, B, C and D and all subparts of the question in section E.

SECTION - A

1. List the differences between renewable and non-renewable sources of energy. What are the different forms of renewable sources of energy? Describe about two forms of renewable energy sources, their availability in India, and methods for their harvest. Discuss about the scope of solar potential in India. Name and briefly describe about two agencies (initiatives taken by them) in India, working for enhancement of renewable energy technologies. (3+2+7+2+6=20)
2. Give a brief description about renewable and non-renewable sources of energy with examples, listing the advantages and disadvantages of both (if any). Discuss about the scope of wind potential in India and measures taken by the government or private bodies, for its harnessing. Which form of renewable energy(s) is most suitable and profitable for India? Discuss with statistics. Briefly explain about Solar map. Mention in brief one method each, for harnessing tidal, geo-thermal, solar and hydro energy. (4+4+5+3+4=20)

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SECTION - B

3. List the methods for conserving energy in India. What are the main areas/sectors which require conservation/management of energy? What is the role of energy audit and financial incentives in energy management? Explain in brief. How are energy conservation techniques applied in industrial, agricultural, transport, residential and commercial sectors? List a few measures taken in each of these sectors. (3+4+3+10=20)
4. Explain the energy conservation techniques applied in industrial, agricultural, transport, residential and commercial sectors? List the short term and long term objectives of energy conservation. What are the measures taken by the Indian government for energy conservation and management? List the standards created for the same. What do you understand by energy conservation building codes? (10+4+4+2=20)

SECTION - C

5. What are the key features involved in efficient usage of electrical energy? List and discuss about at least three electrical devices that help in efficient utilization of electrical energy. Propose a novel technique from your understanding which helps in energy management. Support with two case studies. (2+9+9=20)
6. Discuss the impact of society, industries and economy on energy management. Discuss in brief, three case studies to support your answer. What are the opportunities for engineers in the field of energy management? Discuss the role of GIS in electrical grid. (6+8+4+2=20)

SECTION - D

7. Distinguish between preliminary and detailed energy audits in detail, with steps involved in each. What are the steps involved in energy auditing of commercial buildings? How the power factor of electrical systems can be improved? (8+6+6=20)

8. What do you understand by energy audit? List the steps involved in detailed energy audit for an industrial building. How is energy management strategy planned and implemented? How the power factor of electrical systems can be improved?
(2+7+5+6=20)

SECTION - E

9. (a) What are the disadvantages of using fossil fuels? Site examples.
- (b) What is the difference between energy management and energy conservation?
- (c) List the basic properties of instruments that need to be carried during energy audit.
- (d) What are the factors responsible for determination of final cost of electricity?
- (e) What are the basic criteria for financial investment appraisal?
- (f) Draw and briefly explain a typical Gantt Chart.
- (g) List down the essential elements of monitoring and targeting System.
- (h) What do you understand by CUSUM?
- (i) What is Agenda 21 under sustainable development?
- (j) What do you understand by Conference of Parties? Mention its objectives. (10×2=20)