Code No: NR420203 **Set No.1**

IV B.Tech. II Semester Supplementary Examinations, July -2005
ENERGY MANAGEMENT
(Electrical & Electronic Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain about different sectors of supply side Energy Management.
   (b) Discuss about Objectives of supply side Energy Management and Objectives of end-user side Energy Management.

2. (a) What is meant by cost index.
   (b) An Industrial concern uses $1.5x10^3$ tonnes of industrial coke, $1.8x10^3$ therms of Gas and $1x10^9$ Wh of electricity in one year. The energy costs were as follows: coke Rs:72.00/- per tonne; Gas Rs:0.20/- therm; Electricity Rs:2.25/- per 10^3 Wh. This industry produces $15x10^3$ tonnes per year find out cost indices. Assume
   1 Joule = $947x10^{-6}$btu = $238.8x10^{-6}$calories = $9.478x10^{-9}$therm = $2778x10^{-6}$wh
   (c) Discuss about use and cost of industrial energy.

3. Briefly discuss the factors affecting energy saving potential in an energy intensive industry. Explain the same with an example.

4. (a) Briefly explain the causes of low power factor.
   (b) Explain energy efficient electric motors .

5. Discuss the need of Energy Conservation and Management.
   A process industry located in I.D.A. sanathnagar uses oil and electricity. It has an oil fired boiler and electric fired Furnaces and ovens.It also uses pneumatic equipment during the process. As an energy manager suggest suitable energy management methods for the industry. (Assume any other data required suitably).

6. Discuss the aims of depreciation.
   A construction machine costs 1,00,000 and has an expected life of 5 years and salvage value of Rs 20,000. It is expected to work 2,000 hour's in a year. Find out the depreciation for the machine using
   (a) Straight line method
   (b) machine hour rate

7. What are the situations, which make the replacement of items necessary?
   The cost of a machine is Rs 6100 and its scrap value is only Rs.100.
   The maintenance cost are found from experience to be:

Year Maintenance:	1	2	3	4	5	6	7	8
Cost in Rs. :	100	250	400	60	900	1250	1600	2000

When should be the machine be replaced.

8. (a) Explain with example the measures to be taken for controlling energy usage in an a industry.

   (b) Discuss the functions of Energy manager in promoting Energy Conservation schemes.

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Code No: NR420203 **Set No.2**

IV B.Tech. II Semester Supplementary Examinations, July -2005
ENERGY MANAGEMENT
(Electrical & Electronic Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Elaborate the comprehensive approaches to Energy Management
   (b) How Energy Management programmes are initiated in a Industry and suggest suitable action plan.

2. What are the various techniques used for representation of energy consumption and Discuss in detail with examples.

3. (a) Explain the various steps to be undertaken in order to achieve significant energy conservation in the industrial sector .
   (b) List out the various data to be collected during an energy audit of a small factory.

4. Explain the various steps necessary to avoid low pf. Also list out the advantages of high pf.

5. (a) Discuss the role of Energy Manager in energy management bringing our clearly his functions,duties.
   (b) Discuss Role and place of energy manager.

6. Distinguish between physical depreciation and functional depreciation with examples
   An asset has a first cost of Rs 1,54,000, and has a salvage value of 32,750 at the end of 7 years of life. Calculate the depreciation and book value by
   (a) straight line method
   (b) decline balance method of depreciation.

7. What are the situations, which make the replacement of items necessary?
   The cost of a machine is Rs 6100 and its scrap value is only Rs.100.
   The maintenance cost are found from experience to be:

Year Maintenance:	1	2	3	4	5	6	7	8
Cost in Rs. :	100	250	400	60	900	1250	1600	2000

   When should be the machine be replaced.

8. (a) Discuss the impotance of promoting and monitoring an energy management program in an organization.

(b) Discuss the functions of an energy manager in intiating and managing an energy management program with particular reference to promoting,monitoring and Reporting.

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Code No: NR420203 **Set No.3**

IV B.Tech. II Semester Supplementary Examinations, July -2005
ENERGY MANAGEMENT
(Electrical & Electronic Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss in detail about Managing an Energy Management Program.

2. (a) Discuss about the level of Responsibility in a company to conserve energy.
   (b) Consider a company using three energy forms Oil, Gas and Electricity. The annual energy consumption is shown in table in various energy units find percentage energy balance. Assume
   1 Joule = 947x10^{-6}btu = 238.8x10^{-6}calories = 9.478x10^{-9}therm = 2778x10^{-6}wh
   1 Joule = 5.6497 x 10^{-9}gal.

Energy Type	Consumption
Oil	10x10^3 gal
Gas	5x10^3 therm
Electricity	995x10^3 kwh

3. (a) Briefly explain the importance of energy conservation
   (b) List out the steps required for an energy conservation programme

4. (a) Explain the power factor improvement by the use of synchronous capacitors.
   (b) Explain the following lighting terminologies
      i. maintenance factor
      ii. depreciation factor
      iii. waste light factor
      iv. absorption factor.

5. (a) Discuss the role of Energy Manager in energy management bringing our clearly his functions,duties.
   (b) Discuss Role and place of energy manager.

6. Discuss the aims of depreciation.
   A construction machine costs 1,00,000 and has an expected life of 5 years and salvage value of Rs 20,000. It is expected to work 2,000 hour's in a year. Find out the depreciation for the machine using
   (a) Straight line method
   (b) machine hour rate

7. Explain why replacement is necessary.
   A truck is priced at Rs. 60,000 and running costs are estimated at Rs. 6000 for each of the first four years, increasing by Rs. 2000 per year in the fifth and subsequent years. If the money is worth 10 percent per year, when should the truck be replaced? Assume that the truck will eventually be sold for scrap at negligible price.

8. (a) Discuss the importance of planning and leading an energy management program in an organization.

   (b) Discuss the functions of an energy manager in intiating and managing an energy management program with particular reference to planning,Leading and controlling.

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Code No: NR420203 **Set No.4**

IV B.Tech. II Semester Supplementary Examinations, July -2005
ENERGY MANAGEMENT
(Electrical & Electronic Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain about Energy strategy, Energy Policy and Planning of Energy Management.

2. (a) Discuss about Detailed energy Audits.
   (b) The consumption and cost of energy used by a company over a monthly period is shown in table,

Monthly Energy Consumptionand Cost

Type of Energy	Quantity	Price per unit
Solid fuel (tones)	40	Rs. 29/-
Liquid fuel (gallons)	10000	Rs. 0.33/-
Gaseous fuel (therms)	400	Rs. 0.18/-
Electricity (103 Wh)	90000	Rs. 0.25/-

Find out energy index, the cost index and plot the specific fuel consumption against product output. If the monthly output of the company were 150 tonnes. Assume

1 Joule = 947x10^{-6}btu = 238.8x10^{-6}calories = 9.478x10^{-9}therm = 2778x10^{-6}wh

1 Joule = 5.6497 x 10^{-9}gal.

3. (a) Briefly explain the importance of energy conservation
   (b) List out the steps required for an energy conservation programme

4. (a) Under what conditions would you recommend installation of pf improvement plant for augmenting the Kw loading capacity of generating station in preference to installing additional generating equipment .
   (b) Explain the pf improvement by the use of static capacitors.

5. Write short notes on
   (a) control of energy
   (b) language of energy manager . A foundry unit in an industrial area is to be energy audited. As a energy manager how would you conduct the Audit and present a report (assume any essential data).

6. What is meant by time value of money?
   Calculate the depreciation rate using the Straight-line method, sum of years digit method for the asset with salvage value zero. Life of asset 5 years. Cost Rs 1,80,000. For decline balance method use 40% rate.

7. Explain why replacement is necessary.
   A truck is priced at Rs. 60,000 and running costs are estimated at Rs. 6000 for each of the first four years, increasing by Rs. 2000 per year in the fifth and subsequent years. If the money is worth 10 percent per year, when should the truck be replaced? Assume that the truck will eventually be sold for scrap at negligible price.

8. (a) Discuss the importance of planning and leading an energy management program in an organization.
   (b) Discuss the functions of an energy manager in intiating and managing an energy management program with particular reference to planning,Leading and controlling.

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