

Code: 9A02808

1

B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

ENERGY AUDITING & DEMAND SIDE MANAGEMENT

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 Explain in detail about how to conserve electrical energy and explain some of the means to conserve energy.
- 2 Explain briefly about the following:
 - (a) Energy index
 - (b) Pie charts
- 3 Discuss about constructional details of energy efficient motors.
- 4 Explain in detail about the effect of harmonics on power factor with a suitable example.
- 5 Write a short notes on the following:
 - (a) Watt meter
 - (b) Thermocouples
- 6
 - (a) Explain how to develop cash flow models.
 - (b) Explain the concept of depreciation in energy economic analysis.
- 7
 - (a) Define DSM and explain the benefits of DSM.
 - (b) Explain about the concept of 'time of day pricing'.
- 8
 - (a) Explain in brief about the concept of load management.
 - (b) Discuss about load priority technique.

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2

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Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain in detail about the energy situation in world and in India.
(b) Discuss briefly about the electrical energy conservation with suitable examples.
- 2 Write a short notes on the following:
(a) Cost index
(b) Sankey diagrams
- 3 (a) Explain about the importance of energy efficient motors.
(b) Explain briefly about some of the performance characteristics of energy efficient motors.
- 4 (a) Explain the need of power factor improvement with a suitable example.
(b) A 3- ϕ , 50 Hz, 400 V motor develops 100 H.P, the power factor being 0.75 lagging and efficiency 93%. A bank of capacitors is connected in delta across the supply terminals and power factor raised to 0.95 lagging. Each of the capacitance units is built of 4 similar 100 V capacitors. Determine the capacitance of each capacitor.
- 5 Write a short notes on the following:
(a) Lighting energy audit.
(b) Application of PLC's.
- 6 (a) Explain how to develop cash flow models.
(b) Explain in brief about taxes and tax credit.
- 7 Explain in detail about the different techniques of DSM with necessary examples.
- 8 Explain in detail about the following:
(a) Load priority technique.
(b) Strategic conservation.

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3

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Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Explain in brief about electrical energy consumption and conservation in India and in the world.
- 2 Explain in detail about energy conservation schemes with necessary examples.
- 3 Write a short notes on the following:
 - (a) Voltage unbalance
 - (b) Motor energy audit
- 4
 - (a) Discuss about location of capacitors in power factor improvement.
 - (b) Explain in detail about the importance of power factor improvement.
- 5 Explain in brief about the following:
 - (a) Lighting energy audit
 - (b) Tongue testers
- 6
 - (a) Write a short note on payback analysis.
 - (b) Explain the concept of depreciation in energy economic analysis.
- 7
 - (a) Define DSM and explain the importance of it.
 - (b) Explain briefly about different techniques of DSM.
- 8
 - (a) Define load management and explain its importance.
 - (b) Discuss in brief about peak clipping and peak shifting.

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4

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Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 Explain in brief about electrical energy consumption and conservation in India and in the world.
- 2 Define the term energy audit and briefly explain various types of energy auditing.
- 3 (a) Explain about the factors affecting the efficiency of motors.
(b) Explain about variable duty cycle systems.
- 4 Explain in detail about various power factor improvement methods.
- 5 Write a short notes on the following:
 - (a) Lighting control
 - (b) Data loggers
 - (c) Lux meters
- 6 Explain in detail about the time value of money concept and payback analysis.
- 7 (a) Explain the concept of DSM and benefits of it.
(b) Discuss about different techniques of DSM.
- 8 (a) Explain in detail about load management.
(b) Write a short note on energy efficient equipment.
