

Ganpat University
M. Tech. Semester-II (Electrical Engineering)
Regular Examination July-2013
3EE206:- Power Quality & Energy Management

Time: 3 Hours

Total Marks:-70

- Instructions:** - 1. Attempt all questions.
 2. Make suitable assumptions wherever necessary.
 3. Figures to the right indicate full marks.

SECTION-I

- Que-1 (A)** Discuss ten steps methodology for detailed energy audit. [06]
(B) What are the benefits of benchmarking energy consumption? Also discuss project priority guidelines. [06]

OR

- Que-1 (A)** Draw structure of deregulated industry and explain function of different entities. [06]
(B) What are the various steps in the implementation of energy management in an organization? [06]

- Que-2 (A)** Using the net present value method, evaluate the financial merits of two Proposed projects shown in table. The annual rate is 8 % for each Project. [06]

	Project 1	Project 2
Capital cost	30000	30000
Year	Net annual saving (Rs.)	Net annual saving (Rs.)
1	+6600	+6500
2	+6600	+6500
3	+6300	+6400
4	+6300	+6200
5	+6000	+6200
6	+6000	+6000
7	+5700	+5600
8	+5700	+5600
9	+5400	+5500
10	+5400	+5500
Total net saving at end of tenth year	+60000	+60000

- (B)** Discuss the need of financial analysis in Energy management? Discuss advantages and limitations of simple pay back method. [05]

OR

- Que-2 (A)** Discuss energy conservation tips for thermal utilities. [06]
(B) Discuss the main points of energy saving in buildings [05]

- Que-3** **Attempt following question.**
- (A) List down objectives of energy management and discuss managerial functions involved for the same. [05]
- (B) Explain demand side management. [05]
- (C) Discuss plant energy performance and production factor. [02]

SECTION-II

- Que-4 (A)** Explain the cause and effect with respect to power quality point of view. What is an immunity of the equipment? Discuss the treatment criteria for a equipments. [06]
- (B) Explain the causes of transients in power system. [06]

OR

- Que-4 (A)** Explain the criteria of voltage tolerance for specific equipment. [06]
- (B) What do you mean by Power quality? Discuss methodology of power quality problem evolutions? [06]

- Que- 5 (A)** State and explain briefly the harmonic current mitigation techniques. [06]
- (B) Discuss the effect of harmonics on a transformer. What is k rating of a transformer? Determine the k rating of a transformer required to carry a load consisting of 500 A of fundamental, 200 A of third harmonics, 120 A of fifth harmonics, and 90 A of seventh harmonics. Assume fundamental frequency is 50Hz. [05]

OR

- Que- 5 (A)** Explain in detail various loads which are responsible for introduction of harmonics in the system. [06]
- (B) What are causes of high neutral current flow? Explain its effect on operation of power system. [05]

- Que-6** **Attempt following Questions.** [12]
- (A) Discuss responsibilities of supplier and user of electrical power with respect to power quality.
- (B) Discuss “switching of loads” and “interruption of fault currents” as causes of transients.
- (C) Explain guideline for harmonic voltage and current limitation.

END OF PAPER

Best of Luck