

GANPAT UNIVERSITY
B.TECH SEM-VI ELECTRICAL ENGINEERING
REGULAR EXAMINATION April - June 2015
2EE611: Energy Audit & 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

- Q:1** (A) Discuss ten steps methodology for detailed energy audit. (6)
 (B) Discuss various parameters required to measure during energy audit and also list the equipments required to measure that parameters. (4)
 (C) Define energy audit. (2)

OR

- Q:1** (A) Discuss need of energy management and energy performance. (5)
 (B) Explain various factors to be considered for successful implementation of variable speed drives. (5)
 (C) What do you understand by the term "Present value of money". (2)
- Q:2** (A) Describe the various methods to determine motor loading. (5)
 (B) Calculate the net present value of following project. The capital cost of project is 50,000/- Rs and interest rate is 8%. (4)

Year	Income/Expenditure
1	+ 4000
2	- 2000
3	+ 8000
4	- 4000

- (C) What is the main drawback of simple payback period method? (2)

OR

- Q:2** (A) Discuss internal rate of return method for financial analysis. (5)
 (B) If the stator resistance/phase of induction motor is 0.256Ω at room temperature and full load current is 50A. Find the stator copper losses if motor operate at 80°C . (4)
 (C) Define motor efficiency. (2)

- Q:3** **Attempt any Two:** (12)
 (A) Define 'Per Capita Energy Consumption' and why developed countries have been able to maintain low ratio of energy to GDP?
 (B) What do you think of strategies required for long-term management of energy in India?
 (C) How Bureau of Energy Efficiency (BEE) facilitates energy efficiency programs in India?

SECTION-II

- Q:4 (A) Describe selection and location of capacitor for improving Power factor of distribution system. (6)
(B) What is the function of ballast and ignitors in a lighting system? (3)
(C) What do you understand by the term colour rendering index? (3)

OR

- Q:4 (A) Define room index? Calculate room index for a room of length 10 m and width 20 m and determine the appropriate number of measuring points for lux levels. (6)
(B) A 3-phase, 415 V, 100 kW induction motor is drawing 50 kW at a 0.75 PF. Calculate the capacitor rating requirements at motor terminals for improving PF to 0.95. Also calculate the reduction in current drawn and kVA reduction, from the point of installation back to the generated side due to the improved PF. (6)

- Q:5 (A) Briefly explain about "force field analysis" as a tool for achieving goals of energy action planning. Give two examples each of positive and negative forces acting towards achieving the goal in an industry. (5)
(B) What do you mean by occupancy sensors? Explain how occupancy sensors can be used as energy efficient lighting equipment? (6)

OR

- Q:5 (A) What is maximum demand? Explain how maximum demand controller works? (5)
(B) Describe about 5 items each of responsibilities and duties of Energy Manager as assigned under the energy conservation Act, 2001. (6)

- Q:6 **Attempt any Three:** (12)
(A) What are the components of a DG Set System?
(B) Write a short note on UNFCCC.
(C) How do you assess waste heat recovery potential in a DG set?
(D) What do you mean by Green house effect? Name at least three greenhouse gases responsible for global warming?

END OF PAPER

Best of Luck