

**GANPAT UNIVERSITY**  
**B.TECH SEM-VI ELECTRICAL ENGINEERING**  
**REGULAR EXAMINATION MAY- JUNE 2016**  
**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) Define Energy Audit and discuss ten steps methodology for detailed energy audit. (6)  
 (B) A three phase induction motor takes 20A at full load and operating at 90°C. Stator resistance/phase is  $0.315\Omega$  at 30°C. Find total stator copper loss at operating temperature. (3)  
 (C) Write Short notes on "Performance evaluation of Rewound motor". (3)

**OR**

- Q:1** (A) Compare ordinary motor with energy efficient motor and justify energy efficient motor is cheaper than ordinary motor for long run. (6)  
 (B) Discuss various factors affecting motor efficiency and minimizing losses in operation. (3)  
 (C) Describe the various methods to find motor loading. (3)

- Q:2** (A) Discuss importance of financial analysis and explain simple payback period with advantage and limitation. (6)  
 (B) Calculate net present value (NPV) for the following project. (5)

Investment	Rs. 10,00,000
Saving in Year	Cash Flow
1	2,00,000
2	2,00,000
3	3,00,000
4	3,00,000
5	3,50,000

**OR**

- Q:2** (A) Explain Net present value and Internal rate of return methods. (5)  
 (B) What are the benefits of benchmarking energy consumption? Also discuss project priority guidelines. (4)  
 (C) For the following reading of blocked rotor test for three phase induction motor, Calculate circuit parameters. (2)  
 90V, 35A, 1350 W.

- Q:3** **Attempt the following questions:** (12)  
 (A) Define 'Per Capita Energy Consumption' and why developed countries have been able to maintain low ratio of energy to GDP?  
 (B) Discuss various reforms in the energy sector with Electricity Act 2003.  
 (C) Differentiate between Energy Conservation and Energy Efficiency.



## SECTION-II

- Q:4 (A) What are the areas to be looked into for maximum demand reduction in industry? (6)  
(B) 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)

OR

- Q:4 (A) 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 with installation of capacitor for power factor improvement. (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)

- Q:5 (A) Describe responsibilities and duties of Energy Manager as assigned under the Energy Conservation Act, 2001. (5)  
(B) Explain the working of a soft starter and its advantage over other conventional starters. (6)

OR

- Q:5 (A) What do you mean by Occupancy Sensors? Explain how Occupancy Sensors can be used as energy efficient lighting equipment? (5)  
(B) What is Kyoto protocol, and what its implications for developed and developing countries? (6)

- Q:6 Attempt the following questions: (12)  
(A) How do you assess waste heat recovery potential in a DG set?  
(B) Connected load of a plant is 1200 kW and Diversity factor is 1.8. What is the desirable set rating with respect to 0.8 PF and the set load factor of 75%?  
(C) Write a short note UNFCCC.

END OF PAPER

Best of Luck