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Code No:D6404

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II SEMESTER EXAMINATIONS, APRIL/MAY 2012
ELECTRICAL ENERGY CONVERSION
(POWER ENGINEERING AND ENERGY SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1. Along with the applications and constructional details explain the operation of Universal and reluctance motors.

2. a) Explain any two methods to improve the power factor.
   b) Explain the constructional details of energy efficient motors.

3. a) Explain the construction and principle of operation and application of
      i) filament lamp
      ii) mercury vapour lamp
   b) Define the terms:
      beam angle, beam lumens, waste light factor and utilization factor.

4. a) Define the following terms:
      i) connected load ii) maximum demand
      iii) diversity factor iv) demand factor
   b) Explain about the energy audit check list and data analysis.

5. a) Discuss the following:
      i) plugging of DC motors
      ii) regenerative braking of AC motors
   b) Explain about three part tariff and two part tariff.

6. a) List out the factors affecting the selection of motor.
   b) Show that the diversity factor and the load factors are inter-related.

7. a) Derive the relation between E, I and L for a uniform diffuse source.
   b) A consumer consumes 1×10^6 KW hrs per year and his yearly load factor is 40 %. The tariff is Rs.110 per kW per year + paise 50 per unit. Determine the saving in his energy cost annually if he improves his load factor to 100 %.

8. a) State and prove Kelvin's law for determining economic size of conductor for overhead lines and discuss its limitations in practice.
   b) List out the steps for lighting energy conservation.

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