

**GUJARAT TECHNOLOGICAL UNIVERSITY**

M.E. Sem- I Examination January 2010

**Subject code: 710706****Subject Name: Energy Management****Date: 29 / 01 / 2010****Time: 12.00- 2.30pm****Total Marks: 60****Instructions:**

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

- Q.1** (a) Explain the concept of Energy Management. What are the approaches for the same in industrial as well as domestic fields? **06**
- (b) (i) State efficiency of 5 h.p. , 10 h.p. , 15 h.p. and 30 h.p. energy efficient motors. Each motor is 4-pole motor. **06**  
(ii) Explain effect of number of poles on p.f. pf an induction motor with same rating.  
(iii) Discuss efficiency of combined cycle power plant with and without co-generation.
- Q.2** (a) What is the difference in Quality Power and Reliable Power? **06**  
(b) How to find out power system reliability for any system you choose. **06**
- OR**
- (b) What is power system security? **06**
- Q.3** (a) State and explain qualitative parameters of quality power. **06**  
(b) How power factor is improved for distribution system? **06**
- OR**
- Q.3** (a) Explain the effect of choice of voltage of transmission on saving energy of transmission. **06**  
(b) Why modern distribution system should adopt 4 core cables at the place of 3<sup>1/2</sup> core cable? **06**
- Q.4** (a) Explain: ROI, IRR cost evaluation by payback terms. **06**  
(b) State the luminous efficiency of Tungsten filament lamp, Tube light and CFL tube **06**
- OR**
- Q.4** (a) Explain Preliminary Energy Audit and Detailed Energy Audit. **06**  
(b) What are the instruments required to do Energy Audit. **06**
- Q.5** Write technical note on:
- (a) Demand side management. **06**  
(b) Minimization of losses in Boiler. Also state overall efficiency of thermal Power plant. **06**
- OR**
- Q.5** (a) How variable speed drive is saving energy? **06**  
(b) Discuss the points of energy saving in buildings. **06**

\$\$\$\$\$\$\$\$\$