

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Examination July 2010

Subject code: 722104

Subject Name: Energy Conservation & Management

Date: 09 /07 /2010

Time: 11.00am – 1.30pm

Instructions:**Total Marks: 60**

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

Q.1 (a) Write Various Ways to Conserve Energy in Residential Buildings, Hospitals and Industries. **06**

(b) Briefly explain Energy Efficient Equipments **06**

Q.2 (a) How is economic growth linked to energy consumption? **06**

(b) List down the various energy conservation opportunities available in a steam system? **06**

OR

(b) Why energy conservation is important in the prevailing energy scenario? **06**

Q.3 (a) Briefly Explain various factors affecting thermal performance of building **06**

(b) A Window AC is required for an office size 5 x 3 x 4 m high. The structure load is estimated to be 6000 kJ/h. There are 10 persons doing moderate work. There is no smoking. The ambient and inner conditions are

$T_{db} = 310\text{ K}$, $\phi = 50\%$ and $T_{db} = 395\text{ K}$ and $T_{wb} = 290\text{ K}$ respectively. There are five 40 W tube lights. Obtain the capacity of the air conditioner.

Specific Volume of Ambient Air = 0.906 m^3

Enthalpy of Ambient Air per kg mass of Dry air = 90.7 kJ

Enthalpy of Condition Air = 48.5 kJ

No. of Air Change per 24 h = 13.4

Office Ventilation = $7.1 \times 10^{-3}\text{ m}^3/\text{sec}$

OR

Q.3 (a) Explain Energy Management Strategies for Industries with suitable examples **06**

(b) Which are the four basic loads considering for Heat gain/ Heat loss calculation? Explain also. **06**

Q.4 (a) Why instruments are required for Energy Audit? Please give brief details of six Energy Audit instruments **06**

(b) Indicate where the retrofit can play a role in an industrial facility & how? **06**

OR

Q.4 (a) What is an Energy Audit? Write Difference between Preliminary & Detailed Energy Audits **06**

(b) Mention three circumstances, where co-generation is likely to be most attractive. **06**

Q.5 (a) What is the function of 'back pressure steam turbine'? **06**

(b) List out electrical energy parameters required while carrying out cogeneration system performance evaluation **06**

OR

Q.5 (a) Briefly explain the importance of "energy information systems" in energy action planning. **06**

(b) List all the requirements of energy action planning? **06**
