

GUJARAT TECHNOLOGICAL UNIVERSITY**ME - SEMESTER– II (Old course)• REMEDIAL EXAMINATION – SUMMER 2015****Subject Code: 1723902****Date:16/05/2015****Subject Name: Energy Audit and Energy Management****Time: 02:30 pm to 5:00 pm****Total Marks: 70****Instructions:**

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

- Q.1 (a)** State and explain the functions of Instruments used for Energy Audit. **07**
- (b)** Explain in detail the methodology for conducting a detailed energy audit. **07**
- Q.2 (a)** Briefly explain transformer losses and how the total transformer losses at any load level can be computed. **07**
- (b)** A 3 ϕ AC Load draws 8 KW power at 400 V supply voltage and 15 A line current. Calculate the power factor of the load. **07**
- OR**
- (b)** Calculate power loss in a 1 ϕ supply having the following details: **07**
- Resistance of line = 0.01 ohm / mtr
 - Length of supply = 10 km
 - Supply voltage at sending end = 230 V
 - Line Current = 10 A
 - Power factor = 0.80
- Q.3 (a)** Explain energy audit of Boiler in detail. **07**
- (b)** What are the benefits of waste heat recovery? **07**
- OR**
- Q.3 (a)** Discuss the following terms for the efficient operation of compressed air system: **07**
1. Quality of air
 2. Capacity control of compressor
 3. Piping layout
- (b)** State any seven energy saving opportunities in compressed air system. **07**
- Q.4 (a)** What are the types of lamps used in lighting system? Write down their features with typical applications. **07**
- (b)** Write short note on Energy Efficient Motor. **07**
- OR**
- Q.4 (a)** Write advantages of FBC boiler. **07**
- (b)** Enlist and discuss the energy saving methods for the pumping system. **07**
- Q.5 (a)** A layout dimension of an office building was 9 M length by 6 M width. The height of the lamp fixed above the desk plan area is 3 M. The total circuit watt for the entire lighting is 1200 watts. The measured lux level at the existing condition was 600 lux using lux meter. The lux level was improved to 800 lux by modification of layout fittings. The target lux of this office is 40 lux/watt/m². **07**
- Find out energy saving potential if office is working 10 hrs a day for 300 working days using ILER method.

- (b) Explain Following Terms: 07
1. Demand Side Management (DSM)
 2. Economic thickness of insulation
 3. Net Present Value (NPV)
 4. Harmonics
 5. Fluidized bed combustion
 6. Luminous Efficacy (lm/W)
 7. Thermostatic steam trap

OR

- Q.5** (a) Explain in detail the working of Thermodynamic and Thermostatic type of steam trap? 07
- (b) Explain the concept of cogeneration with a neat sketch. 07
