

TEZPUR UNIVERSITY
Spring Semester 2018
Assignment – I
DRE 203: Energy conservation

Total marks: 30
(Attempt all questions)

- 1 A 150 kW compressor of rated capacity 1000 cfm was run for an hour in a plant to evaluate the leakage, while no compressed air was using. The Free Air Delivery test was also carried out before performing the leak test and it was found that the compressor was delivering 90% output of the rated capacity. If the compressor was on load for 10 minutes only, then calculate
- FAD
 - Specific power consumption
 - Leakage percentage in the compressed air system
 - Leakage quantity
 - Power loss due to leakage
- [2×5=10]**
- 2 A chemical factory is having a contract demand of 2000 kVA. The minimum billing demand is 70% of the contract demand. The connected load to the plant is 4000 kVA. The recorded demand and power factors of January 2015 are 2400 kVA and 0.8, respectively. The monthly consumption of this factory is 4.0 lakh units with an average and maximum loads of 1400 kW and 1800 kW, respectively. Calculate the
- minimum billing demand of the factory
 - load factor and demand factor of the plant
 - Calculate the cost of monthly electricity consumption of this factory using the following basic tariff structure:
- | | |
|-------------------------|----------------|
| Monthly demand charges: | ₹300 per kVA |
| Unit charges: | ₹7.25 |
| Monthly surcharge: | ₹0.25 per unit |
| Monthly service tax: | ₹0.20 per unit |
- [2+2+2=6]**
- 3 Explain different components of tariff structure in the electricity billing of medium and large enterprises. **[8]**
- 4 A 4-pole 415 V 3-phase, 50 Hz induction motor runs at 1440 RPM at .88 pf lagging and delivers 10.817 kW. The stator loss is 1060 W, and friction & windage losses are 375 W.
- Calculate
- Slip
 - Rotor copper loss
 - Line current
- [2×3=6]**