



Revision Notes Ecor 1010 Lab 2 Summarized

Introduction to Engineering (Carleton University)

ECOR LAB 2 Personal Notes

September-25-14

- It is absolutely essential to understand the concepts of dimensions, dimensional measurements,

Significant figures and unit systems before the fundamental tools—mathematics and physics—can be applied to an engineering situation.

- Must know SI, Gravitational (FPS), and hybrid American system.
- Drafting (sketching) with Intellicad 2000
- Determine the surface and volumes of three typical engineering components

Part 1:

- Efficiency is n
- Dimensionless ratio of the power of n
- Q is the volume rate- volume/time
- P is pressure increase
- Then u can calculate for Q
- $Q = v_n$ which is average flow velocity time A which is the area (cross sectional) for flow.

Given three different pumps to analyse for **Efficiency**:

- $##$ is replaced by the last two numbers- "72"
- Expressed in all three systems SI, FPS and US
- You can use conversion software or the table below.
- **Calculate for the three pumps.**

Part 2:

- Three different steel alloys; Figures 1 2 3 shown in isometric view: Equally distorted in H Plane or symmetrical- **Better definition needed.**
- Parts coated to protect from corrosion. Therefore covering the whole surface of these objects.
- To determine amount and cost **total surface** area must be calculated

1. For Part 1, calculate the efficiencies (η), as percentages, for each of the three pumps, keeping

good track of the units and their conversions, and significant figures. Use the efficiencies to rank the pumps from most efficient to least efficient.

2. Calculate the total volume (cm³

) and the total surface area (cm²

) of the parts shown in Figures

1, 2 & 3 and include these in the results section of your report (supporting calculations should be attached in an appendix). Report each value to four decimal places.

3. Generate Figure 15.25 following the instructions in Chapter 15 of the textbook