

Name _____

AE 569 – Exam 2
(Take-Home)
100 points

Problem:

Design a bucket conveyor to lift dry corn at a rate of 20,000 bu/h. The discharge spout is to be 120 ft above the loading point. Design for $C/W = 1.2$. Assume belt width can be increased to accommodate any number of buckets from Figure 12.14 placed side by side.

Specify:

- Bucket size
- Number of rows of buckets on belt
- Bucket vertical spacing
- Belt speed
- Horsepower required at motor shaft
- Head pulley diameter
- Head pulley rotational speed in rev/min
- Value of C/W if rotational speed is increased by 10 rev/min from specified speed.

Rules:

1. Make and state any additional assumptions needed to complete the problem.
2. You cannot discuss this problem with anyone else in the 569 class, but you may consult with anyone else.
3. You can use any references you want. Chapter 12 should be adequate. Cite any other references.
4. Turn in the completed exam at the term project presentations, Monday May 6, at 12 noon.