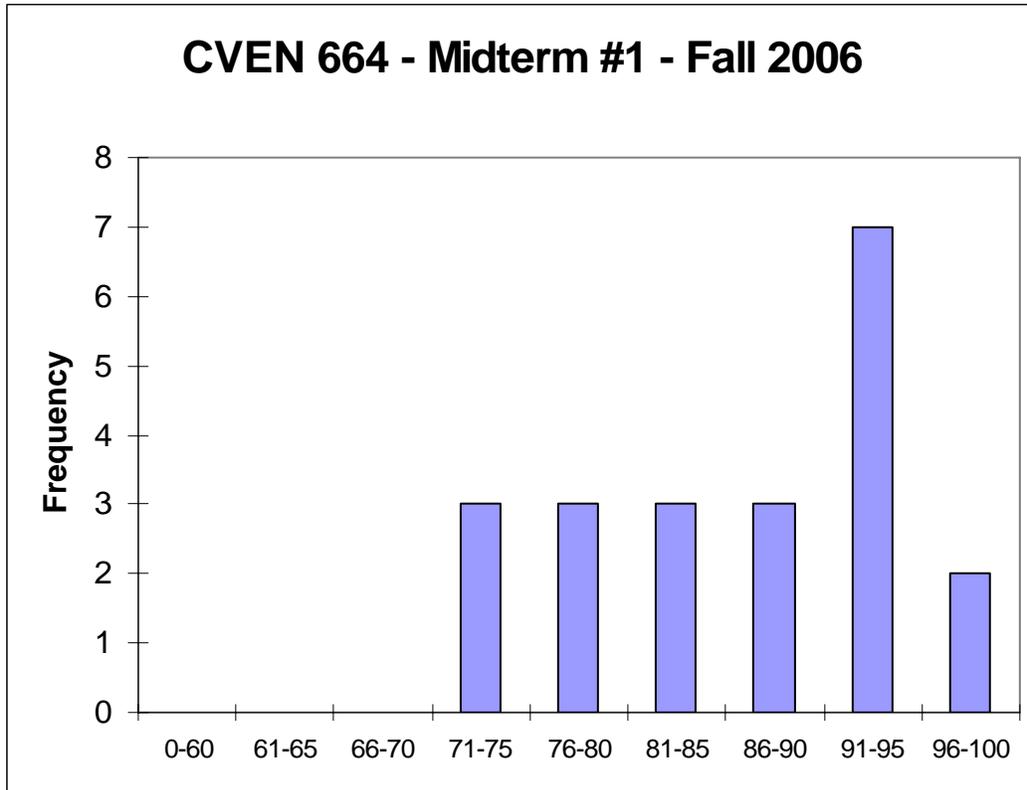


CVEN 664 – Midterm Exam #1 – Fall 2006

21 Students

Median 89.5
Mean 85.9
St Dev 8.2
High 100
Low 71.5



Name: _____

CVEN 664 – Water Resources Planning and Management
Fall Semester 2006
Dr. Kelly Brumbelow, Texas A&M University

Midterm Exam #1

Closed-book section (3 pages, 6 questions); Max. time allowed for this section: 45 minutes

1. What is a typical value of daily, per capita, indoor domestic water use? How and where was the value determined? (6 points)

2. What is Pareto-optimality? How is it important in multi-objective analysis? (6 points)

3. Define the following and tell why each is important: FIRM, SFHA, Floodway, and 0.2% annual chance flood area. (8 points)

4. What does the hourly power system load look like for a typical day in winter? How is power generation structured among various technologies to meet this demand? What is the exact role of hydropower in this schedule? (10 points)

5. Name the 5 categories of wastes and pollutants commonly introduced into surface and ground waters as named in class. For each, name a specific example of the category, and describe the reasons for concern over each category (i.e., why are they “bad”?). (10 points)

6. What is a crop-water production function? What is a net profit-water function? How are they useful? Sketch 2 different net profit-water functions for comparison: one for a “dry” season, and one for a “wet” season. (8 points)

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CVEN 664 – Water Resources Planning and Management
Fall Semester 2006
Dr. Kelly Brumbelow, Texas A&M University

Midterm Exam #1

Open-book Section (1 page, 4 questions); Time allowed is rest of 90 minute period after closed-book section

The following questions address the Devils Lake, North Dakota, case study:

1. Who are the major observers of this SYSTEM? For each observer, describe the observer's perspective.
2. One of the web pages suggested as an additional resource included the following:

A 2006 poll by Friends of the Earth Canada found that the majority of people in Manitoba and North Dakota were aware of the issue and "67.3 % of North Dakotans agreed with the statement, 'As a good neighbor, North Dakota should not allow polluted water to enter Canada.' This statement was supported by nearly all of the Manitobans (96%)".

What physical reality of the SYSTEM does the notation "polluted water" represent?

3. Two critical water resources objectives in this system are flood damage mitigation and water quality. How does it appear that each objective could be quantified in this SYSTEM (i.e., how exactly would you measure the "amount" of each objective "produced")?
4. Following after question 3, sketch a tradeoff curve (PPF) for these 2 objectives. Where in the state-space of the tradeoff curve was this SYSTEM operated in summer of 2006 (i.e., what point on or off of this curve was achieved this past summer)?

Attach additional sheets as necessary. (52 points)