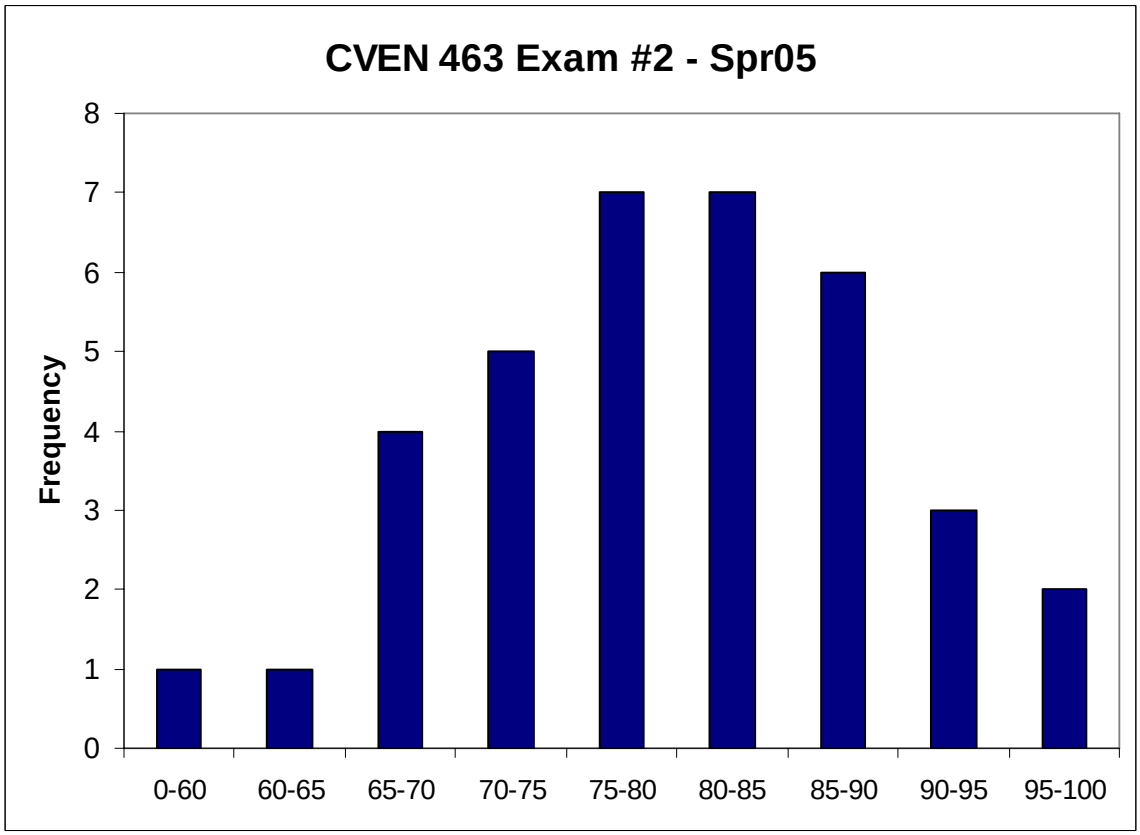
CVEN 463 – Spring 2005 – Midterm Exam #2

Grade Statistics (36 students)

Median	80.5
Mean	79.5
St. Dev.	10.4
Maximum	96.5
Minimum	50.25



Name: _____

CVEN 463 –Engineering Hydrology
Spring Semester 2005
Dr. Kelly Brumbelow, Texas A&M University

Exam #2

Closed-book, Closed-notes (1 page, 2 questions in this section, max. 15 minutes)

Complete this section, and submit it to the proctor who will give you the Open-Book section

1. Give a complete and intelligible definition for the term *HSG* (3 points):

2. What role does pre-existing soil moisture have on runoff processes in general? How is it accounted for in the Green-Ampt method? … in the Curve Number method? … in the Horton infiltration method? (7 points)

Name: _____

CVEN 463 –Engineering Hydrology
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Exam #2

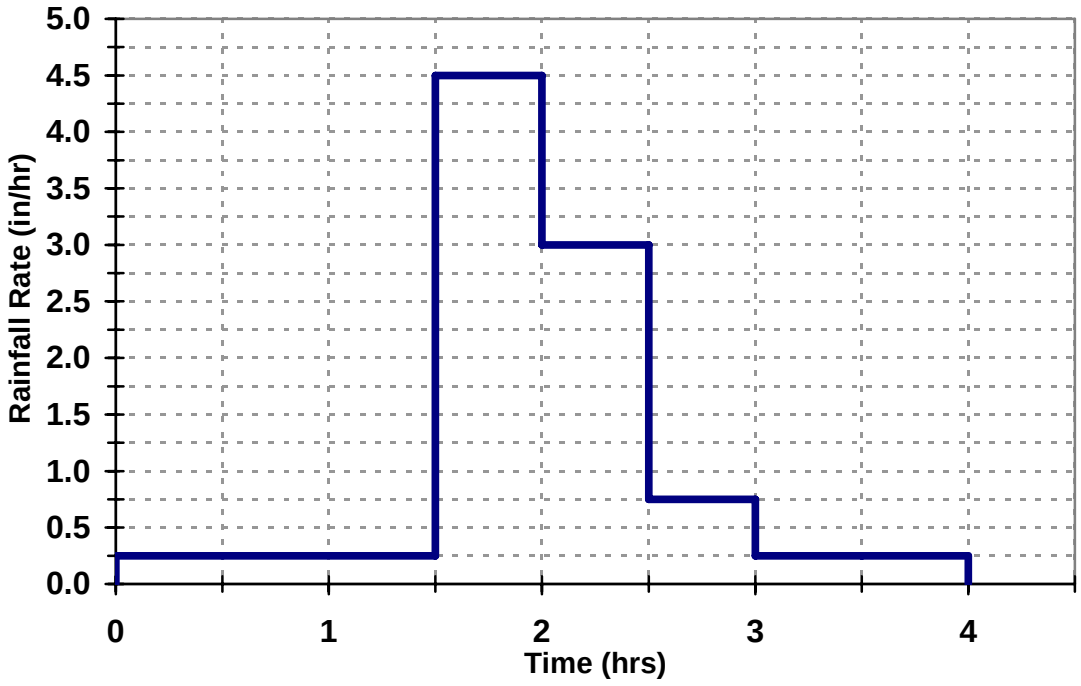
Open-book, Open-notes (2 questions and 3 pages in this section, time allowed is rest of class after submission of closed-book section)

1. A storm hyetograph is shown below. It is desired to divide this storm into four 1 hour sub-storms so that runoff may be calculated by convolution of a 1 hour unit hydrograph. The watershed under analysis has a composite curve number of 87 and Horton infiltration parameters: f_c = 0.12 in/hr, f_o = 0.55 in/hr, and β = 2.0 hr^{-1}.

(a) Because of low amounts of vegetation cover on the watershed, it has been determined that initial abstractions I_a in the curve number method should be calculated equal to 0.08▪S. Using the curve number method, calculate the incremental runoff quantities in each of the four 1 hour sub-storms.

(b) Calculate the four incremental runoff quantities again using the Horton infiltration method. You may assume that interception is negligible so that the only initial abstraction to be considered is infiltration prior to ponding.

(60 points)



2. A watershed has area 65.8 mi^2, hydraulic length 14.9 mi, centroid length 6.2 mi, and Snyder coefficients $C_p = 1.2$ and $C_t = 2.3$. Using the Snyder synthetic unit hydrograph method, determine the flow and time ordinates of the peak of the 3 hour unit hydrograph for this watershed (e.g., $Q_p = 100$ cfs/in and $t_p = 1$ hr).

(30 points)