TSM 352 HOMEWORK ASSIGNMENT 10

**Due Monday, May 4th at 11:59 pm**

1. A 10-acre field is irrigated with a 2 cfs stream for 24 h. Runoff was measured and averaged 0.5 cfs for 6 h. (a) Based on only these two measurements, what is the maximum possible application efficiency? (b) If soil water content measurements before and after the irrigation show 3.5 in. of water was added in the root zone, what is the application efficiency?
2. The distribution of infiltrated depth after irrigation of a border varies linearly from 8 in. at the upper end of the field to 4 in. at the lower end of the field. Determine the distribution uniformity.



1. Assume the border in Problem 2 is 800 ft long and 50 ft wide, and the soil water deficit before irrigation was 4 in. A flow of 2 cfs was delivered for 3 h. What is the application efficiency?
2. Determine the acreage to be irrigated per day and the depth of water to be pumped to irrigate 30 acres of corn in a hot climate. The soil has a final infiltration rate of 0.4 in./h and a water holding capacity of 4.2 in. in the root zone. Assume a water-application efficiency of 70 percent. Irrigation is to begin when 40 percent of the water has been depleted.
3. Determine the sprinkler capacity in gpm for a 60- by 80-ft spacing if the water application rate is 0.3 in./h.
4. What is the application rate in in./h for a 25 gpm sprinkler where the spacing is 60 by 80 ft?
5. The following information is available for subsurface irrigation design.

Drain pipe depth = 4 ft; depth to water table midway over drains = 1.6 ft; depth to water table midway between drains = 2.5 ft; depth to impermeable layer = 28 ft; irrigation coefficient for corn = 1/4 in/day; and hydraulic conductivity = 0.1 ft/hour

Estimate the required drain spacing.