



HOME READING #1

CE4214 Hydrology

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NOTE: This home reading and problem solving are NOT TO BE PASSED but it should be written in the notebook. However, these questions will be covered either in a quiz and final examination.

Please summarize your answers.

- a. What are the factors to be considered in determining a sustainable water system?
- b. What are the stages in water system design process?
- c. Can you cite one example of the effect of climate change on the availability of water, particularly on more intense rainfall events. Briefly explain why?
- d. What are the three types of precipitation? Define and draw/sketch each type
- e. Differentiate the following types of recording rain gauges: (a) tipping bucket rain gauge (b) weighing type rain gauge (c) float type rain gauge.
- f. Draw/Sketch a tipping bucket rain gauge and label the main parts.
- g. What are the conditions that need to be met prior to precipitation forming?
- h. What are the static variables on precipitation distribution?
- i. Define the following: (a) throughfall (b) stemflow (c) interception loss (d) interception gain
- j. What are some of the errors in measuring rainfall that need to be considered in designing a method for the accurate measurement of rainfall?
- k. Define the following: (a) flux (b) radiation emission (c) net radiation (d) vapour pressure (e) relative humidity (e) sensible heat (f) latent heat (g) potential evapotranspiration
- l. What are the factors that influence evapotranspiration on land?
- m. What are the field measurements used in determining quantity of evaporation?



PROBLEM SOLVING. Table below shows the rainfall amounts recorded during a storm. Calculate the (a) total rainfall (b) average intensity (c) the duration (d) peak intensities for 15, 25, 35, and 45 minutes. All answers in metric system (mm and mm/hr).

Time, minutes	Rainfall Amount, inches
5	0.06
10	0.25
15	0.35
20	0.51
25	0.59
30	0.49
35	0.45
40	0.56
45	0.28
50	0.20
55	0.15
60	0.04

SUGGESTED READING MATERIALS: These are uploaded in the subject link bar

Davie, Tim (2008). *Fundamentals of Hydrology*, USA: Taylor & Francis e-Library.

Han, Dawei (2010). *Concise Hydrology*, Dawei Han and Ventus Publishing APS.

The World Bank Office-Manila (2012). *Rural Water Supply Design Manual*, Manila: The World Bank Office-Manila.