

- 1 A sieve analysis of sediment distribution is given in the table below.
- Plot the sediment size distribution curve.
 - Determine d_{90} , d_{65} , d_{50} , d_g , σ_g .
 - You will observe that the given sample is a non-uniform material. Explain how you can manage to convert this sample to a uniform material; e.g., by eliminating some class ranges.
 - Plot the new uniform sediment size distribution curve and determine d_{90} , d_{65} , d_{50} , d_g , σ_g .

Class No.	Class Range (mm)		d_i (mm)	i_b
1	0.06-0.10			0.10
2	0.10-0.30			0.30
3	0.30-0.5			0.17
4	0.5-1.0			0.20
5	1.0-2.0			0.10
6	2.0-5.0			0.05

- 2 Use an alternative method (not explained in the class), the data in problem #1, and the following data for a rectangular channel, determine the velocity of the flow at incipient motion. Compare the result with the one obtained by Yang method.

$$Q = 10 \text{ m}^3/\text{s} ; B = 12 \text{ m} ; S = 0.0001$$

- 3 A river has a rectangular section and the following data is given. Obtain the stage-discharge relationship, using the data in problem #1 and any desired method, for two situations. In the first situation, assume that the channel has rigid boundaries. Then, assume that channel has movable boundaries. Assume any necessary data you need to perform the analysis.

$$S_0 = 0.0002 ; B = 50 \text{ m}$$