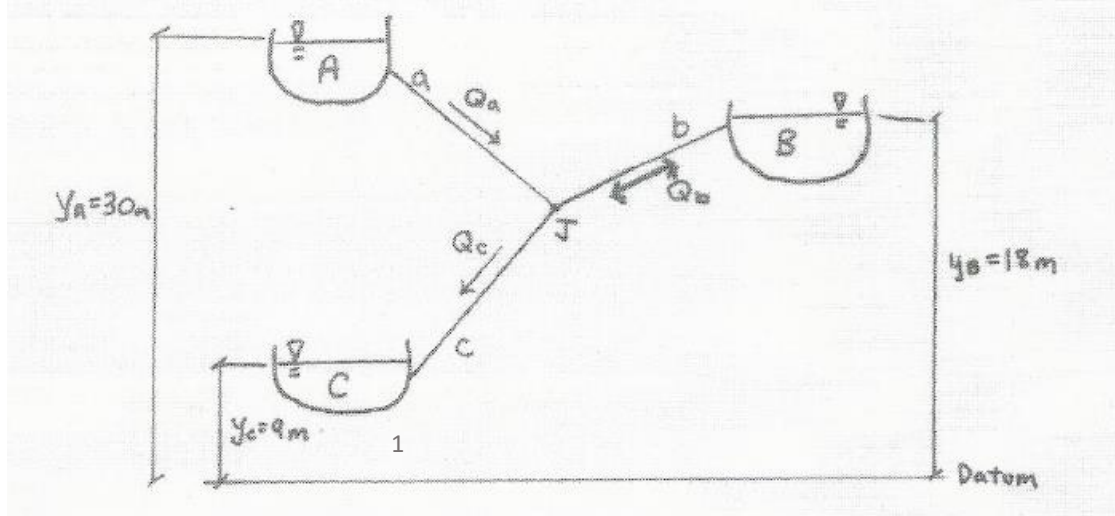


Tutorial 2

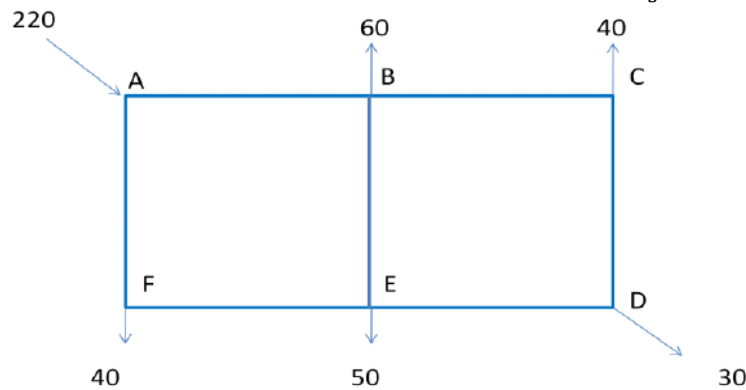
1. Estimate the discharge in each of the pipe sections a, b and c.



Given

Pipe	L (m)	D (m)	λ
a	3000	1.00	0.014
b	600	0.45	0.024
c	1000	0.60	0.020

2. Consider the following pipe system: (All inflows and outflows are in $\frac{1}{s}$)



Pipe	AB	BC	CD	DE	EF	AF	BE
Length(m)	600	600	200	600	600	200	200
Diameter (mm)	250	150	100	150	150	200	100

Assume roughness size of all pipes $k_s=0.06$ mm and use $\nu = 1.13 \times 10^{-6}$ if needed.
 Calculate discharge flows, $q_i(\frac{m^3}{s})$ and friction head loss $h_{fi}(m)$ in each pipe section.