



- The excel file given in the folder contains annual maximum rainfall data of various durations for 60 years. Try to fit Log-Normal and Gumbel's distribution to the data. Use the best-fit distribution for estimating the frequencies. Plot the intensity duration frequency curves corresponding to 2, 5, 10, 15, 30 and 50 years of return periods, respectively. Once the IDF data are obtained, fit equation of the form: $i_{D,T} = \frac{K * T^x}{(D + a)^n}$ where, D is the duration of the storm in minutes and T is the return period of the storm event in years.
- Design the storm water drainage system for 5 years return period. Provide uniform triangular gutter section with curb opening inlet. Assume single lane service road with longitudinal slope of 0.001 and cross slope of 0.025. Use the Rational formula for calculating the peak discharge and Kerby's equation for the time of concentration. Also, assume no by-pass flow while designing the inlets.
- Using statistical method, compute the probable maximum 12-h precipitation with a return period of 100 years.
- Develop the hyetograph for a 1.5-hour storm of 25-year return period using alternating block method with 15-time intervals.
- Check the adequacy of your design for the storm event in (d). If your design is inadequate, estimate the extent of water logging in the vicinity.

Basin	Area of the basin (Hectares)	Division of the basin area (%)		Drainage Length (m)	Slope of the basin	Kerby's coefficient
I	0.5	Residential	58	62.2	0.009	0.03
		Lawn and open space	32			
		Paved street roads	10			
II	0.45	Residential	65	48.3	0.012	0.025
		Lawn and open space	25			
		Paved street roads	10			
III	0.55	Residential	55	60.2	0.015	0.031
		Lawn and open space	30			
		Paved street roads	15			
IV	0.42	Residential	65	45.6	0.013	0.023
		Lawn and open space	28			
		Paved street roads	7			
V	0.22	Residential	60	32.7	0.009	0.020
		Lawn and open space	36			
		Paved street roads	4			
VI	0.5	Residential	56	59.8	0.016	0.032
		Lawn and open space	24			
		Paved street roads	20			
VII	0.38	Residential	58	49.1	0.012	0.027
		Lawn and open space	32			
		Paved street roads	10			

Pipeline	Length of the pipeline (m)	Avg. slope
11-21	1000	0.003
21-31	400	0.0042
31-41	400	0.0035
41-51	500	0.002
51-61	600	0.0025
16-61	700	0.003
17-61	300	0.004

Manhole	Reduced level of manhole (m)
11	140.1
21	139.3
31	138.5
41	137.6
51	136.4
61	132.5
16	135.2
17	134.6

Note:- You can make any other assumption(s), if necessary, beyond the code provisions. Make sure to mention the same in the final report.