# 5.2 Data Preparation

#### Line & Cable Branch Preparation: (10 score)

Calculate the per-unit data of the lines and enter them into the following table. (base value: 100MVA)

Branch #	rated V-kv	R	Х
branch-1	69	0.00556	0.01184
branch-4	13.8	0.0610	0.1215
branch-5	13.8	0.0075	0.0063
branch-8	13.8	0.0157	0.0131

#### Transformer Branch Preparation: (22 score)

Per-unit data of the positive and zero sequence impedances of transformers are required. The perunit data is based on 100MVA.

Branch #	Rated KVA	Rated Pri. V (kV)	Rated Sec. V (kV)	Тар	R pu	X pu
branch-2	15000	69	13.8	1.01	0.03132	0.5324
branch-3	1500	13.8	0.48	0.975	0.63953	3.7796
branch-6	1250	13.8	0.48	0.975	0.59184	3.55104
branch-7	1725	13.8	4.16	0.975	0.43142	3.45142

## Capacitor admittance calculation: (6 score)

Calculate the shunt capacitor admittance in Mho/phase. B = 0.0315

## Load Information (8 score)

Bus #	3 phase LOAD		
	Р	Q	
	MW	MVAR	
BUS-4	7.03287	6.279	
BUS-6	0.78	0.68913	
BUS-8	1.11974	0.45	
BUS-9	1.053	1.04013	

## Generator and Motor Information: (9 score)

In the sample case, BUS-1 is the utility supply system and is treated as the slack bus. The cogenerator is a PV bus. The motor in the system is modeled as a negative generator (PQ bus).

Bus #		Bus Type (Slack,	Voltage	δ	Real	Reactive
		PV or PQ)			Power	Power
			KV	degree	MW	MVAR
BUS-1	Utility	Slack	69	0		
BUS-2	Co-generator	PV	13.731		2	
BUS-3	Motor	PQ			-1.15	-0.39