

Department of Electrical Engineering
Assignment
Date: 14/04/2020

Course Details

Course Title: High Voltage Module: 6th
Instructor: _____ Total Marks: 30

Student Details

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Q1	High voltage system is used throughout the world briefly explain which type of high voltages is used in pakistan and also write down the categories of high voltage transmission lines.	(10 marks)
Q2	Compare the pros and cons of overhead lines and underground cables. Which type of lines you will prefer as an electrical engineer and give proper reasons.	(08 marks)
Q3	The Transmission and Distribution section is divided in different categories. Differentiate between the following terms accordingly to your hometown scenario with the help of proper diagram labeling. ✓ Primary Transmission & Secondary Transmission	(12 marks)

✓ Primary Distribution & Secondary Distribution	
✓ Conductor & Insulator	

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Q₁ High voltage system is used throughout the world. Briefly explain which type of high voltages used in Pakistan and also write down the categories of high voltage transmission lines.

Ans₁ => The world mostly used b/w 220V and 240V whereas in Japan & Americas the voltages used between 100 and 127 volts => in Pakistan used high voltage up to 220 kV

=> The categories of high voltage transmission line used in Pakistan is CHV (EHV) and (UHV)

=> (HV) high voltage is up to 220 kV
=> (EHV) more than 220 kV is Extra High Voltage
=> (UHV) ultra high voltage is 500 kV which is highest transmission voltage used in Pakistan.

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Q2) Compare the pros and cons of overhead and underground lines, which type of line you will prefer as an electrical engineer and give proper reasons?

Ans → An overhead power

line is an electric power transmission line suspended by towers or poles since most of the insulation is provided

⇒ Advantages ⇒

⇒ It can work upto 400kV or more than 400kV

⇒ It can work upto 400kV or more

⇒ It is less expensive

⇒ Insulation cost is less

⇒ Fault Repair can be easily.

=> Disadvantages =>

- => More chances of supply interruption.
- => Less safe for public safety
- => More chance of supply interruption.

=> under ground lines =>

underground is the replacement of overhead cables providing electrical power or telecommunication with underground cables --- an added benefit of undergrounding is the aesthetic quality of the landscape without the powerlines

=> Advantages =>

- => very safe for public safety
- => very little chances of being subjected to lightning
- => very little chance supply interruption.
- => very rare chances of fault.

Disadvantages →

- ⇒ More need insulation
- ⇒ only work upto 66kV
- ⇒ very expensive
- ⇒ Fault cannot easily repair.
- ⇒ Fault point cannot locate easily.

⇒ I prefer as an electrical engineer is ~~over~~ under ground Transmission Cables.

Under ground line is more ~~the~~ expensive than over-head Transmission but the under ground transmission cables / line are very safe than over head T/L and very little chances of being subjected to lightning thunder and very little chances of supply interruption very rare chances of fault. by this reason I prefer the under ground cable system.


Q.3, The Transmission and distribution section is divided in different categories. Different b/w the following terms according to your hometown scenario with help of hometown scene with proper diagram Labeling-

=> Primary Transmission & Secondary Transmission

=> Primary Distribution & Secondary distribution.

=> Conductor and insulator.

Primary Transmission :->

 Primary Transmission
electric power from electric generating Station to the Substation

=> the voltage is stepped down to 33 kV or 66 kV

=> Secondary Transmission

-> Secondary Transmission Lines emerge from receiving station to connect substation located near load center. The voltage is stepped down again to 11kV at a substation.

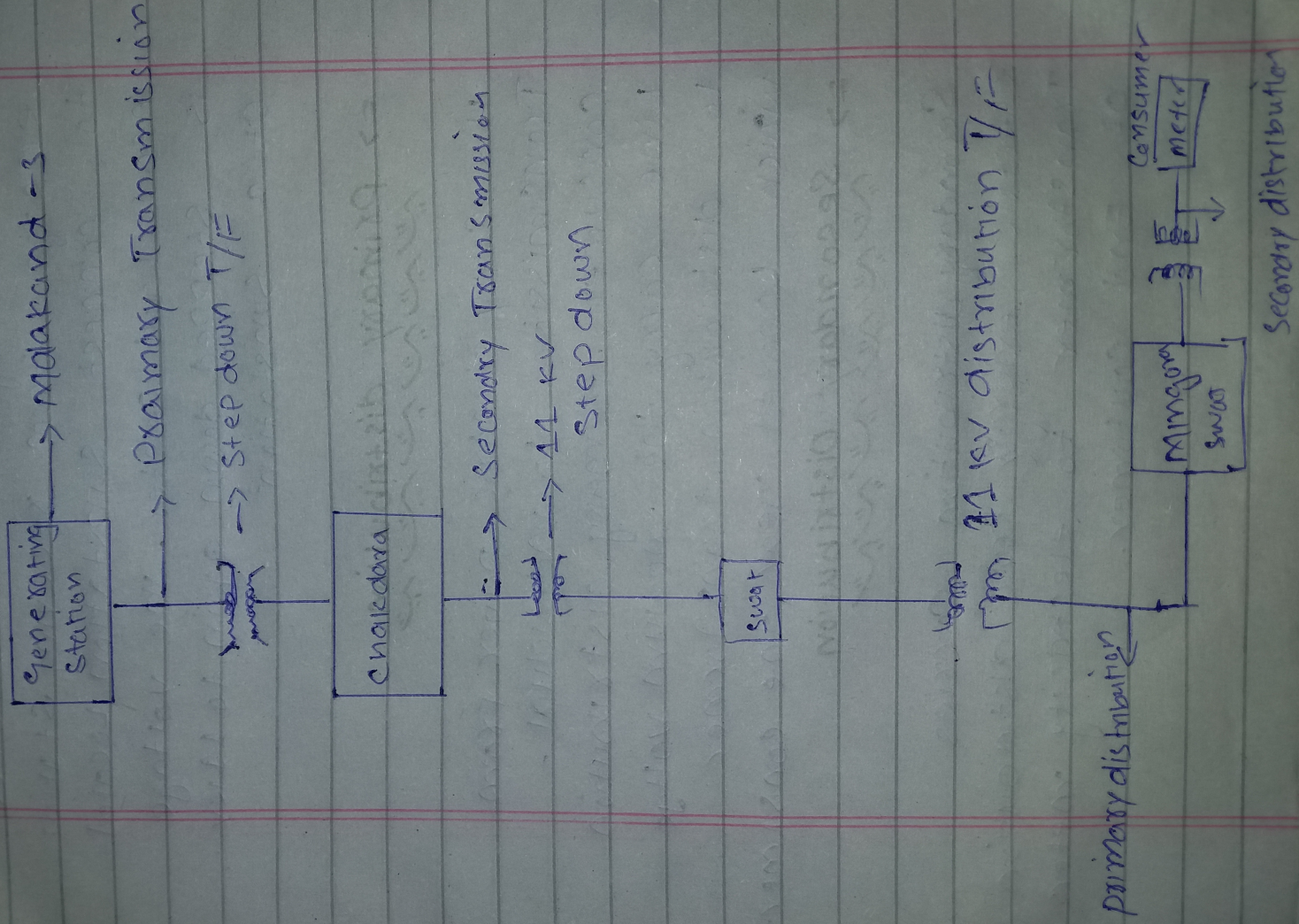
=> Primary distribution

It carry electric power from transmission to individual consumer. primary distribution line carry the medium voltage to distribution transformer which located near the consumer.

=> Secondary Distribution

Secondary distribution carries electric energy from distribution transformer to electricity meters of end customer.

Diagram of my hometown Scenario



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Differentiate Between Conductor and Insulator

Conductor \Rightarrow An electrical

conductor is substance in which electrical charge carries usually electrons, move easily from atom to atom with the application of voltage. Conductivity, in general, is the capacity to transmit something such as electricity or heat --

Copper, Steel, gold, aluminium and brass are also good conductor.

Insulator \Rightarrow Insulator is a

material which cannot allow electric current means in the insulator current can not flow.