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Kamran # ID# 6990

(Q No 1)

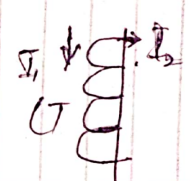

what are the difference
between cts and VIs,

Ans 1

The difference between current transformer and potential transformer one of the major difference between them is that the current transformer converts the high value of current in to low value whereas the potential or voltage transformer converts the high value of voltages in to low voltage.

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#	Basic For Comparison	Current transformer	Potential transformer
#	Definition	transform the current from high value to the low value	transformed the value of voltage from high value to low value
	Circuit symbol		
	Core	usually built up with lamination of silicon steel	it is made up of the high quality steel operating at low flux density.
	Primary winding	it carries the current which is to be measured	it carries the voltage which is to be measured

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CT

PT/VT

Secondary circuit	Has a large number of turns and cannot to be open circuit.	Has a small number of turns and can be open circuit.
Range	5A or 1A	110V
Transformation ratio	high	Low
Input	constant current	constant current
Full line current	The Primary winding consists the full line current	The Primary winding consist the full line voltage
Type	Two types (wound and closed core)	two types (Electromagnetic capacitor voltage)
Impedance	Low	High

Q No 1
b

What are the pros and cons
of AC and DC transmission.

AC transmission Advantages

AC Disadvantages

- | | |
|--|--|
| 1) Nowadays, the generation transmission and distribution mostly is in AC | 1) Requires more copper than DC |
| 2) The level of AC voltage are may be increased or decreased step up and step down using transformer | 2) Due to skin effect in the AC system the effective resistance of line is increased |
| 3) The repairing and maintenance of AC sub station is easy and inexpensive than DC substation. | 3) AC line has capacitance therefore it continuously loss of power due to charging current even when the line is open. |
| 4) The power can be generated at high voltage | |
| 5) Easy to switch OFF | |

DC transmission advantage

DC disadvantage

- | | |
|---|--|
| (1) Require only two conductor | (1) Electric Power can not be generated at high DC voltage |
| (2) There is no inductance, capacitance, phase, difference and surge problem. | (2) due to commutation problem |
| (3) DC Line requires less insulation | (3) DC voltage can not be stepped up |
| (4) Less corona loss and reduced interference with communication circuit. | (4) The switches and circuit breakers have their own limitation. |
| (5) The high voltage DC transmission is free from dielectric losses. | (5) it have does not change their value and direction. |
| | (6) Flow in straight line. |

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Any

Introduction!

Electric power transmission is the bulk movement of electrical energy from a generating site, such as a power plant, to an electrical substation, the interconnection lines which facilitate this movement are known as transmission network.

The combined transmission and distribution network is known as the national grid.

Primary transmission!

High voltages of the order of the 66 kV, 132 kV, 220 kV and 400 kV are used for transmitting power by 3 phase wire overhead system. This is supplied to substations usually the outskirts of major distribution centre or city.

Secondary transmission!

On the outskirts of the city, there are substation which step down the

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Primary transmission voltage to 66 kV or 33 kV and power is transmitted at this voltage. This forms the secondary transmission system. 3 phase wire system is used.

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Secondary transmission

On the outskirts of the city there are substations which step down the primary transmission voltage to 66KV or 33KV and power is transmitted at this voltage. This forms the secondary transmission system. 3 phase wire system is used.

Secondary distribution

This consists of the low voltage network laid along the streets, localities and over the usual areas from these source connections to individual customers are provided. The circuit used for the purpose is 3 phase 4 wire 440V/220V from which either 3 phase 440V or single phase 220V supply to the consumers may be provided.

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Sub system	voltage level
Primary transmission	500 KV & 220 KV
secondary transmission	132 KV & 66 KV
Primary distribution	11 KV
Secondary distribution	220-230V
	Single phase & Three phase

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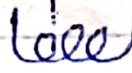
Central station

three phase alternator



11 kV

11/132 kV



STEP UP T

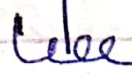
Primary Transmission

132 kV

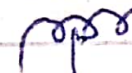


STEP DOWN T

Receiving station

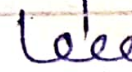


33 kV



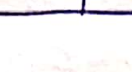
33 kV

33/3.3 kV



STEP DOWN T

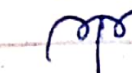
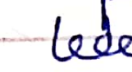
primary distribution



3.3 kV

Distribution Transformer

Secondary distribution



440/220V

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DN08

(b)

(A) part

The Electricity Act!

The need for enactment of Electricity Act 2003, was felt by the central government in the backdrop of the on going economic reforms in the country coupled with power sector reforms in various states.

Electricity act 2003 is a single legislation which address all the key areas of electricity in the country and provides a road map for over all and uniform development of electricity sector in the country.

PURPOSE OF the Act!

- TO promote competition in the sector
- TO protect the interests of consumers
- TO rationalize the electricity tariffs.
- TO ensure supply of electricity to all areas

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Rural Electrification!

Appropriate Government to endeavor to extend supply of electricity to all villages / hamlets.
(section 6)

No requirement of licence if a person intends to generate and distribute power in rural area (section 14)

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Q No 21

(b) Part:

Ans:

OSHA ACT:-

The Occupational Safety and Health ~~Act~~ Act is the primary Federal law which governs occupational health and safety in the private sector and Federal government in the United States. It was enacted by Congress in 1970 and was signed by President Richard Nixon on December 29, 1970.

PURPOSE:-

Occupational safety and health can be important for moral, legal, and financial reasons. In common-law jurisdictions, employers have a common law duty (reflecting an underlying

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moral obligation) to take reasonable care for the safety of their employees.

PENALTIES for Not Complying

With OHSA And Its Regulations:

The maximum penalties for a contravention of OHSA or its regulations are set out in OHSA Section 66. A successful prosecution could, for each conviction result in:

- * A fine of up to \$25,000 for an individual person and/or up to 12 month imprisonment;

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Example:-

As a restaurant owner you have to comply with OSHA's requirements, because you serve food. There may be random check here and there to make sure you follow all the rules and regulations provided.

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Ans!

Arc Interruption in air Blast
CKT Breaker!

The essential features of air blast CKT breaker they are fixed and moving contact in closed position by spring pressure under normal operating condition they the arc is interrupted and the space b/w the contact is finished with fresh air flowing NO ZEP.

(Arc Interruption in SF₆ CKT B)

In the normal operating condition the contact at the breaker are closed when fault occurs in the system contact are pulled apart and the arc is structure between them the displacement of moving contact is synchronized the high pressure SF₆ gas in the arc interrupting chamber at is pressure about 16 kg/cm². These ions increase the dielectric strength of gas and hence the arc is extinguished.

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(ARC Interrupting in oil Ckt)

oil circuit breaker which is used oil as a dielectric or insulating in oil ckt breaker contact of the breaker are made to separate within an insulating oil when the fault occurs in the system contact of the circuit breaker is open under insulating oil and they are developed b/w them arc is evaporated in surrounding of oil

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All Interruption in vacuum
CBT breakers!

Vacuum circuit breakers where the arc quenching takes place in vacuum medium the operation on and closing current carrying contact and interrupted arc interruption take place in vacuum chamber in breaker which is called vacuum interrupter!

Q 19)

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Q No 2
A

What are the dangers of working on a line that runs parallel to an energized?

Ans)

Induced voltage on parallel conductive objects to an energized transmission line could be an unsafe condition under fault condition therefore parallel transmission line introduced voltage on each other conductive conductors which include the overhead earth wire.