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Q = 1 (a)

What are the difference b/w CTs & VTs.

Ans Current Transformer (CT) & Potential Transformer or Voltage Transformer (VT) or (PT) one of the major difference b/w them is that the current transformer converts the high value of current into low values. Where the potential & voltage T/F converts the high value of voltages into low voltage.

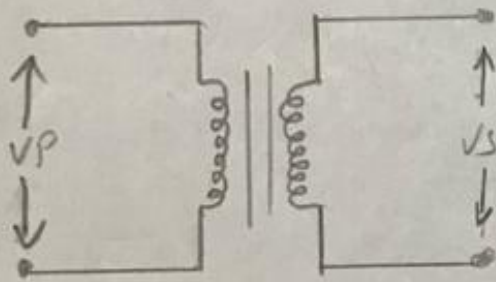
↳ Both T/F are basically used for measurement and protection purpose in power system.

(a) Current Transformer (CT) :-

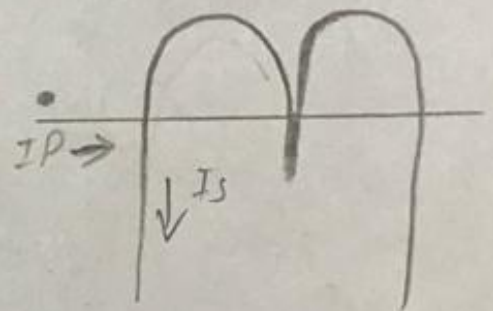
- ① The primary winding of a C.T have smaller or less turns than the secondary.
- ② The secondary of a C.T cannot be open circuited on any circumstance when it is under service.

- (3) A current Transformer may be considered as a series T/F.
- (4) The primary winding of a C.T is connected in series with the line carrying the current to be measured. Hence it carries of the full line current.
- (5) With the help of C.T, a 5A ammeter can be used measure a high current like 200A.
- (b) Voltage T/F (P.T) (V.T) :-
- (1) The primary winding of a P.T have larger number of turns than secondary.
 - (2) The secondary of a (P.T.) (V.T) can be open circuited without any damage being caused either to the core or the transformer.
 - (3) (P.T/V.T) may be considered as a parallel T/F.

- (4) The Primary current of a P.T/VT depends upon The secondary ckt conditions (burden/Load) -
- (5) With The Help of (PT/VT), a 120 Voltmeter can be used to measure very High Voltages like 11KV -



Symbol of
VT



Symbol of
CT



Q-1

(B) What are the Pros & Cons of AC & DC Transmission -

Ans Pros of AC Transmission :-

- 1) Power can be generated at high voltages and as there is no commutation problem.
- 2) AC voltage can be conveniently stepped up or stepped down.
- 3) High voltage transmission of AC-power reduces losses.

Cons of AC Transmission :-

- 1) Problems of Inductance & capacitance exist in Transmission line.
- 2) Due to skin effect, more copper is required.
- 3) Construction of AC Transmission line is more complicated as well as costly.

⊕ Pros of DC Transmission :-

- 1) It requires only two conductors.
- 2) There is no problem of inductance, capacitance and phase displacement which is common in AC Transmission.
- 3) For the same load and sending E_s voltage, the voltage drop in DC Transmission line is less than that in AC Transmission.

⊕ Cons of DC Transmission :-

- 1) Generation of power at high DC voltage is difficult due to commutation problem and cannot be usefully utilized at consumer ends.
- 2) Step-up or step-down transformation of DC voltages is not possible in equipment like T/F.



Q=2

(A)

What are the dangerous working on a line that runs parallel to an energized line.

Ans Induced voltage on parallel conductive object to an energized transmission line could be a reason for unsafe conditions under fault conditions. Therefore parallel.

- Transmission line introduced voltage on each other conductive conductor which include the overhead earth wire.

Q = 2

(B)

Ans The Electricity Act :-

An act to provide for the appointment and function of electricity supply and at consumer's committees for the electricity supply industry to make new provision with respect to supply of electricity through electric & transmission of electricity for such supply to abolish the electricity consumer council & the consultative councils established under the Electricity Act 1947 to provide for the vesting of the proprietary rights.

① OSHA Act :-

The act created The occupational safety & Health Administration (OSHA) an agency at The department of Labor. OSHA was given The authority both To set & enforce workplace health and safety standards. The Act also created an independent occupational safety and Health review Commission To review enforcement Priorities action and cases.



Q = 3

Ans

ARC Interruption in
Air-Blast ckt Breaker

The essential features of air-Blast ckt Breaker. They are fixed & moving contact in closed position by spring pressure under normal operating condition.

Thus the ARC is interrupted and the space b/w the contact is finished with fresh air flowing through nozzle.

④ ARC interruption in SF6 ckt Breaker:-

In the normal operating condition the contact of the breaker are closed when fault occur in the system.

Contact are pulled apart and the air is sucked in through the displacement

of moving contact is synchronized with the value which enters the High Pressure SF_6 - gas in they are interrupting chamber at a pressure about 16 kg cm^2 . These ions increase the dielectric strength of gas and hence the arc is extinguished.

⇒ Arc interrupting in oil ckt breaker :-

Oil ckt 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 occur in the system the contact of the ckt-breaker is open under insulating oil & they are developed b/w them. Arc is evaporated is surrounded of oil.

⇒ ARC interruption in Vacume ckt-Breaker :-

Vacume ckt-Breaker where the
ARC quenching takes place in vacume
mediem. The operation on
and closing current carrying contact
and interracted arc interrution take
place in vacume chamber in
Breaker which is called
Vacume interrution.

Q = 4

Introduction :-

Electric Power Transmission is the Bulk movement of electrical energy from a generating side, such as a power-plant to an electrical substation, the interconnecting lines which facilitate this movement are known as Transmission Network.

- The combined Transmission & Distribution Network is known as the National Grid.

④ Primary Transmission :-

High voltage of the order of 66 kV, 132 kV, 220 kV & 400 kV are used for transmitting power by 3-Phase wire overhead line system. This is supplied to the substation usually the out-sticks of major distribution centre or city.

⊕ Secondary Transmission :-

On the outside of the city, there are Substation which can 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.

⊕ Primary Distribution :-

Primary distribution system connects a distribution Switchyard with the consumer Transformer.

⊕ Secondary Distribution :-

This consists of low voltage The network Laid along the street. Lattdies and over The totals areas from the source connections To individuals costumars are provided. The circuit used for

The purpose is 3-Phase 4-wire 440/220V from which either 3-Phase 440 or single phase 220V supply to the consumer may be provided.

| Substations | Voltages |
|------------------------|------------------------------------|
| Primary Transmission | 500kV to 220kV |
| Secondary Transmission | 132kV to 66kV |
| Primary Distribution | 11kV |
| Secondary Distribution | 220/440V 3-Phase / single phase |

P-T-O

Diagram of my Home Town

