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Basic Electrical LAB LA3.

Q. Write short note on.
1) List various parts of the transformer.
2) List various parts of the Induction motor.

→ 1) List various parts of the transformer.

i) **Core**
- The core of transformer is used to support the windings.
- It is made of soft iron to reduce eddy current loss and hysteresis loss, and provides low reluctance path to flow of magnetic flux.

ii) **Windings.**
- It consists of several copper coil turns bundled together, each bundle connected to form a complete winding.
- It can be based either on the input-output supply or on the voltage range.

iii) **Insulating materials.**
- Insulating materials like papers and card boards are used to isolate primary and secondary windings from each other as well as the transformer core.
- These windings are made of copper due to high conductivity

and ductility.

iv) Transformer oil

- It insulates as well as cools the core and coil assembly.

v) conservator.

- It is an airtight metallic cylindrical drum fitted above the transformer that conserves the transformer oil.
- It is vented at the top and is filled only half with the oil to allow expansion and contraction during temperature variations.

vi) Breather.

- It is the cylindrical container filled with silica gel, which is used to keep the air that enters the tank moisture-free.

vii) Tap changer.

- To balance voltage variations within the transformer, tap changers are used.
- There are two types of tap changers - on load and off load.

viii) Cooling tubes.

- It is used to cool the transformer oil.
- Circulation of oil within the transformer may be natural or forced.

ix) Buchholz Relay:

- Placed over the connecting pipe that runs from the main tank to conservator tank the Buchholz relay senses the faults occuring within the transformer.

x) Explosion vent.

- The boiling hot oil from the transformer is expelled during internel faults through the explosion vent to avoid explosion of the transformer.
- It is generally placed above the level of the conservatory tank.

→ 2) List various parts of the Induction motor.

i) Stator frame.

- It is made up of case iron and its function is to support the core and protect inner parts.

ii) Stator core.

- It is made up of silicon steel and its function is, it houses stator winding.

iii) Stator winding.

- Material used to make this is copper & insulated. It's function is to product rotating magnetic field.

iv) Rotor core.

- It is made up of silicon steel and it houses rotor winding.

v) Rotor winding.

- It is made up of copper and insulated and its function is to produce rotor current.

vi) Air gap.

vii) Air inlet-outlet.

- It provides space for air circulation.

viii) cooling fan.

- It is made up of aluminium and provides air circulation.

ix) slip rings.

- It is made up of phosphorus and Bronze, it connects resistance to rotor circuit via brushes.

x) Brushes.

- It is made from carbon and it provides connection between resistance and slip-rings.

xi) shaft

- Its function is to support rotor.