

**SYLLABUS FOR ELECTRICAL WORKMAN PERMIT (EHT) EXAMINATION**

The syllabus prescribed for Workman (HT) is common to the syllabus of Workman EHT with the following syllabus.

1. General knowledge about power Generation, Transmission and Distribution system in India.
2. Advantage of High Voltage & Extra Voltage Systems.
3. High Voltage & E.H. Voltage A.C. & D.C System.
4. Knowledge in Extra High Voltage transmission system.
5. Types of Tower, shapes & geometry:-
  - (a) Self-supporting towers, conventional guyed towers, Chainette Guyed Towers.
  - (b) Tower designation:- Suspension Tower, Tension Tower, Transposition Towers, Special Towers.
  - (c) Tower Height, Width, Tower anatomy, foundation.
6. Safe electrical clearance of E.H.V. Lines, Spacing between conductors.
7. Simple knowledge about Tower members, member selection & redundant members, Bolts & nuts etc.
8. Testing of towers -: Testing requirements.
9. Conductors used in EHV, Earth wire, Earth insulator, stringing span, jumper, Hot line stringing of EHV lines.
10. Tools used in EHV lines: Theodolite, Dumpy level, Gin pole / Deric pole, polypropylene rope, single shane pulley Hydraulic compressor, Earth Tester, winch etc.
11. EHV underground cable, cable laying, permissible bending of cables, Depth of layings. Maintenance, Inspection of Cables, Cable Joints, Cable Termination Crimp Connections, Fault locating in U/G cables, Methods of fault location, Pre-locating the fault distance, pinpointing of cable fault.

## 12. SUB-STATION–

- (i) Standard layout of Sub-station, bay size, equipment position.
- (ii) Types of bus bar materials, clearance of equipments and rigid conductors spacing for phase strung bus, standard bus, equipment elevation.
- (iii) Earthing practice, earth mat.
- (iv) Earth measurement 3 point & 4 point method.
- (v) Surge / lightning arrester.
- (vi) Transformer, Isolators, Breakers, earth switch, CT,PT,CVT, Post Insulators, wave trap, capacitor bank etc.
- (vii) Transformer's testing & maintenance of transformers.

**Checks:** Silica gel, oil test, Insulation test, PI value check, oil & winding temperature calibration, BDV test, gas analyzing, Bucholz relay, oil level check, Tap changer, moisture content test, cooling fan operation, ratio check. Bushing CT Check, oil filtration etc.

- (viii) Maintenance schedule of breakers, transformers, CT,PT,CVT,PIs, lightning arrester, earthpit.
- (ix) Duties of operation persons in Sub-station.
  - (i) Line Permit.
  - (ii) Isolation & restoration of system to work on permit.
- (x) Station batteries, maintenance batteries, battery charger.
- (xi) Protective relays used for EHV systems. Energy Meters, Ammeter, Voltmeter, Power Factor Meters, Metering.
- (xii) Control equipments.