Nepal Government
Ministry of Communication and Information Technology
National Information Technology Center (NITC)

Post: Electrical Technician
Class: Non gazette I

Syllabus

1. **Electric Circuit**
   Definition, Unit, Explanation and applications of Ohm’s Law and Kirchhoff’s Law,
   Connection of resistors in series, parallel and series parallel Combination

2. **Electro magnetism and Electro statics**
   Definition and formation of hysteretic loop, force on a current carrying conductor placed in
   magnetic field, Self-Inductance, Factors affecting the inductance of coil, Capacitor, Factors
   affecting the capacitance of capacitor, Time Constant (T=RC)

3. **A. C. Fundamentals**
   Comparison between A.C. & D.C. Voltage and current, Generation of A. C. emf, Frequency,
   Angular velocity, phase & phase difference, A. C. Circuit with R. L. C. use of J-operator in
   circuit analysis

4. **Fundamental principles of Star and Delta connection of Three phase Windings, Effect of unbalanced load in three phase system, Voltage drop, Principles and applications of Super Position Theorem, Thevenis's theorem and Norton's theorem**

5. **Objective of earthling of Power system, Causes of Over voltages and its protection, Neutral earthling, Body earthling , Lightning Arrestors - Types, Ratings and Characteristics, applications & locations**

6. **Principles of A. C. Transformer**
   Operating principle, connecting load, No load operation, Reactance, Losses and Efficiency,
   Cooling, Parallel operation of Single phase and Three phase transformer, Tap changing,
   Noises and Temperature Rise

7. **D. C. Generator**
   Introduction and Principle of operation, constructional details, types, Losses and efficiency,
   Parallel operation of d. c. generators

8. **Ammeters and voltmeters**
   Principle of operation, Power factor meter, General concept of measurement of Power,
   Energy, Frequency

9. **Operating Principle, characteristics, construction features of Current Transformer and Potential Transformer and their application**

10. **General concept of load factor, maximum demand, diversity factor, system and line**
losses, power factor corrections, measurement of resistance, inductance and capacitance

11. **Generation of Electrical Energy**
   Types of generating plants, Diesel and Hydro (Working principle, equipment’s, Bus bars and Reactors, Automatic Voltage Regulator, Circuit Breakers, CTs, PTs, Relays etc.)

12. **Lay out concept of Sub-stations and Power-stations** (Cabling, auxiliary plants-such as batteries etc., Fire protection and grounding system)

13. **Transmission Lines**
   Introduction-Overhead lines and Underground cables, Types of cables, Selection of cables & Selection criteria, Mechanical and electrical design of Overhead lines, Sag, Tension, Earthling, Corona, Skin effect, Connection Schemes of distribution system

14. **Principle of operation of D. C. Motor-Types, Torque, Losses and efficiency, speed control, speed-torque characteristics**

15. **Introduction and types or single phase A. C. Motor** (Motors and their characteristics for particular service-Domestic use.)

16. **Introduction, Types, Constructional details and principle of operation of Synchronous Generator (Alternator) and Synchronous Motor, Parallel operation and Synchronizing of Alternator**

17. **Principles of Illumination** (Primary and Secondary illumination, street lighting)

18. **Fundamentals of Protection systems**
   Fuses, MCB Isolators, Contactors, Circuit Breakers - Classification, Construction Operating principle

19. **Importance of Communication in power system**

20. **Principles of cost estimate for distribution system for domestic**

21. **Three phase induction motor**
   Construction, Principle of operation, torque speed characteristics, stand still and running condition, method of starting

22. **Basic Electronics**
   Characteristics of diode, transistor and thyristor, Rectifier and filter, inverter, speed control of DC and AC motor by using thyristor

**Note:**
- Medium of exam is Nepali or English or Both
- No Negative marks