GROUP-2

Electrical Engineering Jobs (Level- Matric+ Diploma in Electrical Engineering)

1) General awareness, Reasoning, Mathematics, Science, History including Haryana related history, current affairs, literature, Geography, Civics, Environment, Culture etc.- **(Weightage 20%)**

2) Computer terminology, Fundamentals, word software, excel software, Power point, internet, web browsing, Communication, emails, downloading and uploading data on websites etc**. -**
(Weightage 10%)

3) Subject related syllabus- **(Weightage 70%)**

A) FUNDAMENTALS OF ELECTRICAL ENGINEERING

1. IntroductionApplication and Advantages of Electrical Energy, Basic Electrical Quantities 2. DCCircuits3. Batteries4. Magnetism and Electromagnetism 5. Electromagnetic Induction

B) ELECTRICAL AND ELECTRONICS ENGINEERING MATERIALS

1. Classification
2. Conducting Materials
3. Review of Semi-conducting Materials
4. Insulating materials; General Properties:
5. Insulating Materials and their applications:
6. Magnetic Materials:
7. Special Materials
8. Introduction of various engineering materials necessary for fabrication of electrical machines such as motors, generators, transformers etc.

C) ELECTRONICS

1. Transistor Audio Power Amplifier
2. Tuned Voltage Amplifier
3. Feedback in Amplifiers
4. Sinusoidal Oscillators
5. Wave-Shaping and Switching Circuits
6. Power supplies:
7. Operational Amplifier

D) ESTIMATING AND COSTING IN ELECTRICAL ENGINEERING

1. Introduction
2. Types of Wiring
3. Estimating and Costing:
4. Estimating Materials Required

ELECTRICAL MACHINES

1. Introduction to Electrical Machines
2. DC Machines
3. Single Phase Transformer
4. Three Phase Transformer
5. Three-Phase Induction Motors
6. Single Phase Motors
7. Single phase induction motors; Construction characteristics, specifications and applications
8. Special Purpose Machines; Linear induction motor, Stepper motor, A.C. Servomotor, Submersible motor.

E) ELECTRICAL MEASURING INSTRUMENTS AND INSTRUMENTATION

1. Introduction to Electrical Measuring Instruments:
2. Ammeters and Voltmeters (Moving coil and moving iron type):
3. Wattmeter's (Dynamometer Type)
4. Energy meter
5. Miscellaneous Measuring Instruments: Megger, frequency meter, multimeter.
6. Electronic Instruments: CRO, Digital multimeter.
7. LCR meters.
8. Power Measurements in 3-phase circuits by
9. Measurements of resistances

UTILIZATION OF ELECTRICAL ENERGY

1. Electric Heating
2. Electric Welding
3. Electrolytic Processes:
4. Electrical Circuits used in Refrigeration, Air Conditioning and Water Coolers:
5. Electric Drives:
6. Electric Traction:

F) DIGITAL ELECTRONICS

1. Number Systems
2. Gates
3. Boolean Algebra
4. Combinational Circuits
5. Flip-Flops
6. Introduction of Shift Registers and Counters
7. A/D and D/A Converters
8. Semi-conductor Memories

G) ELECTRICAL POWER

1. Power Generation
2. Economics of Generation
3. Transmission Systems
4. Distribution System
5. Substations
6. Power Factor
7. Faults
8. Switch Gears
9. Protection Devices
10. Protection Scheme
11. Over-voltage Protection
12. Various Types of Tariffs

H) PROGRAMMABLE LOGIC CONTROLLERS AND MICRO CONTROLLERS

1. Introduction to PLC
2. Working of PLC
3. Instruction Set
4. Ladder Diagram Programming
5 Applications of PLCs
6. Introduction to SCADA
7. Micro Controller Series (MCS)-51 Over View
8 Instruction Set and Addressing Modes
9 Assembly language programming
10 Design and Interface
11. Application of Micro controllers

I) INSTRUMENTATION

1. Measurements: Static and dynamic characteristics of Instruments, Errors.
2. Transducers: Classifications, Electrical transducers.
3. Measurement of Displacement and Strain:
4. Force and Torque Measurement:
5. Pressure Measurement:
6. Flow Measurement:
7. Measurement of Temperature:
8. Measurement of other non-electrical quantities such as humidity, pH level and vibrations

J) SOLAR PANEL INSTALLATION AND MAINTENANCE

1. Check site conditions, collect tools and raw materials
2. Installation of Solar Panel
3. Coordinate colleagues at work
4. Safety at workplace
5. Concept of Solar Tracking System

K) NON-CONVENTIONAL ENERGY SOURCES

1. Basic of Energy:
2. Solar Energy:
3. Bio-energy:
4. Wind Energy:
5. Geo-thermal and Tidal Energy:
6. Magneto Hydro Dynamic (MHD) Power Generation
7. Fuel Cells
8. Hydro Energy – Mini & Micro hydro plants

L) ELECTRICAL ENERGY CONSERVATION AND MANAGEMENT

1. Lighting System
2. Energy Conservation and EC Act 2001
3. Energy Audit
4. Electrical Supply System and Motors
5. Energy Efficiency in Electrical Utilities.
6. General Energy Saving Tips
7. Energy Conservation Building Code

M) INDUSTRIAL ELECTRONICS AND CONTROL OF DRIVES

1. Introduction to SCR
2. Controlled Rectifiers
3. Inverters, Choppers, Dual Converters and Cyclo-Convertors
4. Thyristor Control of Electric Drives
4 Uninterrupted power supplies

N) INSTALLATION AND MAINTENANCE OF ELECTRICAL EQUIPMENT

1. Tools and Accessories
2. Installation
   - 2.1 Installation of transmission and Distribution Lines:
   - 2.2 Laying of Underground Cables:
   - 2.3 Elementary idea regarding, inspection and handling of transformers

2.4 Testing of various electrical equipment such as electrical motor, transformers, cables, and generators, motor control centers, medium voltage distribution panels, power control centers, motor control centers, lighting arrangement, storage, pre-installation checks, connecting and starting, pre-commissioning checks, drying out

3. Maintenance

3.1 Types of maintenance, maintenance schedules, procedures
3.2 Maintenance of Transmission and Distribution System
3.3 Maintenance of Distribution Transformers
3.4 Maintenance of Grid Substations
3.5 Maintenance of Motors
3.6 Domestic Installation

Important Note: The Weightage as mentioned against the syllabus is tentative & may vary.