GOVERNMENT OF MEGHALAYA
INSPECTORATE OF ELECTRICITY AND ELECTRICAL LICENSING BOARD
SHILLONG

SYLLABUS FOR ELECTRICAL SUPERVISORS

General Notes:-

1. The Board reserved the right to amend, alter or add to, the under mentioned syllabuses at any time and without notice.
2. Candidates are not expected to have memorised knowledge of the Indian Electricity Rules, the Central Electricity Authority (measures relating to safety and Electric supply) Regulations, 2010 but they are expected to be able to apply them and give a reason explanation of their meaning in any particular case, so far as electrical installation work is concerned. In the examination they will be permitted to use a copy of the Rules and Regulations.

GENERAL
(COMPULSORY PART)
ELEMENTARY PRINCIPLES

Electrical Properties of materials: - Conductors and Insulators. The effect of commonly occurring conditions such as moisture, heat etc. Condition which hastened deterioration.

Magnetic properties of Materials: - Magnetization by electric current, Electro-magnets and their applications.

Conductors, Bare and Insulated: - Their resistance and safe current carrying capacity, Calculation of sizes of conductors for connected load with due regard to heating and voltage drop.

Electrical Measurements: - Application of Ohm's law to simple methods of ascertaining Resistance, Voltage and Current. The uses and applications of Ammeters, Voltmeters, Ohm-meters, Watt-meters, Ampere-hour-meters, Kilowatt-meters, Kilowatts-Hour meters and their connections.

Electric shock: - Action to be taken. Method and duration of treatment in cases of persons suffering from electric shock.

Drawing: - Drawing and reading drawings of power and lighting circuit diagrams.

Grades and Classes of Cables: - Their suitability for different kinds of installation works. The installation and systematic testing of cables for continuity, leakage, insulation resistance and the testing of connections and earthing.

Indian Electricity Rules, Central Electricity Authority (measures relating to safety and Electric supply) Regulations, 2010: - A general knowledge, particularly of Chapters V and VI of the Rules and Chapters II, III, IV, V, VI and VII of the Regulations.

PART – I

Wiring for systems not exceeding 250 Volts:

Cleat, Wood-casing, Lead-covered, Cab-tyre sheathed, Conduit and Armoured cable together with Main switches and Cut outs, Distribution Boards, Correct installation of switches.

Low Pressure Electrical Appliances:

Such as heaters, cookers, Small motors for pumps, Refrigerators, Electric bells and indicators worked off electric supply lines whether portable or otherwise.

Low Pressure Overhead lines:

General principles of construction, Strength of posts, Length of spans, spacing of conductors, height of conductors from ground, cross-arms, guard wires, safety devices, earthing, lightning conductors and arresters, testing of insulations and earthing.

Indian Electricity Rules:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010; as applicable to installation work of this Part.

PART -II

D.C. APPARATUS EXCEEDING 250 VOLTS AND NOT EXCEEDING 650 VOLTS

Generators:

D. C series shunt and compound wound, elementary theory installation, operation, parallel running of machines balancers.

Motors:

D.C series, shunt and compound wound, elementary theory, their uses, installation, operation and speed, control.

Control Gears:

The various types of Switches, Fuses, Starters, MCBs, Controllers, Regulators; their uses and installations. Installations in general including portable, appliances but excluding that installation work specifically covered by Parts III, V & VI.

Indian Electricity Rules and Regulations:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010; as applicable to installation work of this Part.

PART - III

A. C. APPARATUS EXCEEDING 250 VOLTS AND NOT EXCEEDING 650 VOLTS

Generators

A. C. Single and Polyphase, Elementary theory, Installation, Operation, Parallel running of machines, Rotary convertors, Power Factor meters, Frequency meters and Synchroscope.

Motors:

A. C. Single and Polyphase, Induction and Synchronous machines elementary theory, their uses Installation operation and Speed control.

Control Gears:

The various types of Switches, Fuses, Starters, Controllers, Regulators, their uses and installation. Installations in general including portable appliances but excluding that installation work specifically covered by Parts V & VI.

Indian Electricity Rules and Regulations:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010; as applicable to installation work of this Part.

PART - IV

UNDER GROUND CABLES

For IV (A) voltages upto 1,000 volts.

For IV (B) voltages upto 11,000 volts.

For IV (C) voltages upto and exceeding 33,000 volts (Paper or Cambric) oil filled, gas filled, or any other types.

General Practical Knowledge:

Laying direct in ground, in troughs and in pipes, handling, bending, jointing, plumbing underground and above ground, joint boxes, junction boxes and distribution boxes and pillars, joint box compounds, melting of compounds, fillings boxes with compound.

Indian Electricity Rules and Regulations:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010; as applicable to installation work of this Part of underground cables.

PART - V

INSTALLATIONS EXCEEDING 650 VOLTS (EXCEPT OVERHEAD LINES)

Notes:- A candidates must pass in Parts I, II, III & X before appearing in an examination in Part V Provided that they may appear for all the parts at the same examination but will not be granted a certificate in Part V should they fail in I, II, III & X.

Machines

Generators, Motors and their control gears as in Parts II and III but exceeding 650 volts and also rectifiers and other high pressure apparatus.

Transformers

General principles, Elementary calculations, various types and uses, installation, wiring connection, operations, phasing out and parallel operations, Power Transformers, Distribution Transformers.

Indian Electricity Rules and Regulations:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010; as applicable to installation work of this Part.

PART- VI

OVERHEAD LINES EXCEEDING 250 VOLTS

Note: Proof of experienced from a candidate is required for appearing on this Part.

For VI (A) voltages upto 650 volts.

For VI (B) voltages upto 33,000 volts.

For VI (C) voltages exceeding 33,000 volts.

General practical knowledge:

Erection under varying climatic conditions, spacing of conductors, uses of guys insulators, disc insulators, pin insulators, struts guard wires and cradle guarding, safety devices, lighting conductors and arresters, testing of the installation and earthing, ground clearance for conductors of different voltages, important of circuit breakers, isolators, DO fuse units, GO fuse units,

strength of poles, strength of towers, types of poles and towers for different voltages, important of earth-mat, important of chemical earthing, important of main earth pit, important of shielding of HV and EHV Substations, Types and uses of ACSR conductors, types of channels and cross-arms for construction of lines, important of bracing sets, important of tower's foundation.

Indian Electricity Rules and Regulations:

A working knowledge of the Indian Electricity Rules, Central Electricity Authority (measures relating to safety and electric supply) Regulations, 2010, The Meghalaya State Electricity Regulatory Commission (Electricity Supply Code) Regulations 2018, as applicable to installation work of this Part of such overhead lines.

PART VIII

ELECTRIC LIFTS

NB: - The Indian Electricity Act and Rules do not extend the electrical equipment installed and used in lifts.

General Principles

Installations and connections of A. C. and D. C motors upto but not exceeding 650 volts, Controllers and Safety devices use in lifts.

PART X

WIRING FOR SYSTEMS UPTO BUT NOT EXCEEDING 650 VOLTS

Connection of low pressure Installation to medium pressure supply mains.

Wiring installation including connections for power and other purposes but excluding that installation work specifically, covered by Parts II and III.

A working knowledge of the Indian Electricity Rules, Safety Regulations, The Meghalaya State Electricity Regulatory Commission (Electricity Supply Code) Regulations 2018, as applicable to installation work of this Part.

IMPORTANT INFORMATIONS

The Part(s) to qualify for a Certificate of Competency are:

Part	Certificate of Competency	Parts Compulsory (to pass in given ascending order)
1	Wiring for a system not exceeding 250 Volts	I
2	Wiring for system not exceeding 650 Volts	I & X
3	D.C. Apparatus not exceeding 650 Volts	I, X & II
4	A.C. Apparatus not exceeding 650 Volts	I, X & III
5	IV(A) Underground cable upto 1,000 Volts	I, X, III, IV(a)
6	IV(B) Underground cable upto 11,000 Volts	I, X, III, IV(a), IV (b)
7	IV(C) Underground cable upto and exceeding 33,000 Volts	I, X, III, IV(a), IV (b) & IV(c)
8	Installations exceeding 650 Volts (except overhead)	I, X, III, IV & V
9	VI(A) Overhead lines for voltages upto 650 Volts	I, X, III, VI (a)
10	VI(B) Overhead lines for voltages upto 33,000 Volts	I, X, III, VI (a), VI (b)
11	VI(C) Overhead lines for voltages exceeding 33,000 Volts	I, X, III, VI (a), VI (b) & VI(c)
12	Installation of Electric Lift upto 440 Volts	I, X, II, III, IV & VIII

Notes: - Certificates endorsed for underground cable works and for work of overhead lines exceeding 250 Volts will be provided Certificate of Competency into sections A, B and C which are progressive and cumulative. Certificates granted to successful candidate will be endorsed to denote the section or sections in which the candidate has qualified.

16/09/22

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