

ANNEXURE

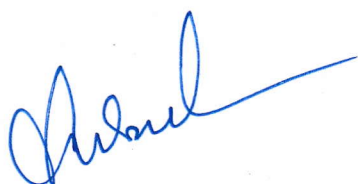
APPROVED SYLLABUS FOR DIRECT RECRUITMENT TO THE POST OF ASSISTANT LABOUR EMPLOYMENT SKILL DEVELOPMENT & ENTREPRENEURSHIP OFFICER (A.LESO) LAW UNDER LABOUR, EMPLOYMENT, SKILL DEVELOPMENT & ENTREPRENEURSHIP DEPARTMENT.

The examination shall consist of Written Examination and Personal Interview.

The written examination shall comprise of the following papers:-

SI No.	Subject/Paper	Question Type	Full marks	Duration
1	General English	Conventional type	100 ✓	3 hours
2	General Studies	Objective Type/MCQ	100 ✓	2 hours
3	Law Paper-1	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours
4	Law Paper-II	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours
5	Law Paper-III	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours
	TOTAL		800 ✓	

Personal Interview- 100 marks ✓



1. General English – 100 Marks

- a) Precis Writing - 14 marks ✓
- b) Letter Writing - 10 marks ✓
- c) Comprehension of given passages - 10 marks ✓
- d) Grammar: Parts of Speech (MCQ) - 30 marks ✓
- e) Correct usage and vocabularies (MCQ) - 16 marks ✓
- f) Formation of sentence (MCQ) - 20 marks ✓
 - i. Verbs
Tenses: Present/past forms, simple/continuous forms, perfect forms, future time reference
 - ii. Sentence Structure
Connectors
Types of sentences: Affirmative/interrogative sentences, negotiation, exclamations.
Types of Phrases and Clauses: finite and non-finite subordinate clauses, noun clauses and phrases, adjective clauses and phrases, adverb clauses and phrases.
Narration (Direct and Indirect speech)

2. General Studies (MCQ) – 100 Marks

- a) Current events of state, national and international importance - 12 marks ✓
- b) History of India and Indian National Movement - 12 marks ✓
- c) Indian and World Geography- Physical, Social, Economic Geography of India and the World - 12 marks ✓
- d) Indian Polity and Governance – Constitution, Political System, Public Policy, Duties & Rights Issues - 12 marks ✓
- e) Economic and Social Development, Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives and other related issues - 12 marks ✓
- f) General issues on Environmental Ecology, Bio-diversity and Climate - 12 marks ✓
- g) General Science - 12 marks ✓
- h) General awareness on Mizo culture, its heritage and society - 16 marks ✓



3. Law Paper-I 200 Marks (MCQ - 100 marks, Conventional type-100 marks)

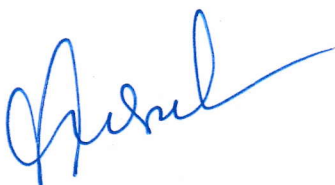
- a) Constitution of India
- b) Code of Civil Procedure, 1908
- c) The Bharatiya Nyaya Sanhita (BNS) Act, 2023
- d) The Bharatiya Nagarik Suraksha Sanhita (BNSS) Act, 2023
- e) The Bharatiya Sakshya Adhiniyam Act, 2023
- f) Indian Contract Act, 1872
- g) The Limitation Act, 1963

4. Law Paper-II 200 Marks (MCQ - 100 marks, Conventional type-100 marks)

- a) The Factories Act, 1948
- b) The Contract Labour (Regulation & Abolition) Act, 1970
- c) The Inter State Migrant Workmen (Regulation of Employee & Condition of Services) Act, 1979
- d) The Mizoram Shops & Establishment Act, 2010
- e) The Child Labour (Prohibition and Regulation) Act, 1986
- f) The Maternity Benefit Act, 1961
- g) The Employees' State Insurance Act, 1948

5. Law Paper-III 200 Marks (MCQ - 100 marks, Conventional type-100 marks)

- a) The Minimum Wages Act, 1948
- b) The Payment of Wages Act,
- c) The Employment Exchange (Compulsory Notification of Vacancies) Act, 1959
- d) The Building & Other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996
- e) The Building & Other Construction Workers' Welfare Cess Act, 1996
- f) The Trade Union Act, 1926
- g) The Unorganised Workers Social Security Act, 2008



APPROVED SYLLABUS FOR DIRECT RECRUITMENT TO THE
POST OF ASSISTANT LABOUR, EMPLOYMENT, SKILL
DEVELOPMENT & ENTREPRENEURSHIP OFFICER (A.LESO)
ENGINEER UNDER LABOUR, EMPLOYMENT, SKILL
DEVELOPMENT & ENTREPRENEURSHIP DEPARTMENT.

The examination shall consist of Written Examination and Personal Interview.

The written examination shall comprise of the following papers:-

Sl No.	Subject/Paper	Question Type	Full marks	Duration
1	General English	Conventional type	100 ✓	3 hours
2	General Studies	Objective Type/MCQ	100 ✓	2 hours
3	Engineering Paper-I	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours ✓
4	Engineering Paper-II	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours ✓
5	Engineering Paper-III	Conventional essay type-100 marks Objective Type/MCQ-100 marks	200 ✓	3 hours ✓
	TOTAL		800	

Personal Interview- 100 marks




1. General English – 100 Marks

- b) Precis Writing - 14 marks ✓
- c) Letter Writing - 10 marks ✓
- d) Comprehension of given passages - 10 marks ✓
- e) Grammar: Parts of Speech (MCQ) - 30 marks ✓
- f) Correct usage and vocabularies (MCQ) - 16 marks ✓
- g) Formation of sentence (MCQ) - 20 marks ✓
 - i. Verbs
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2. General Studies (MCQ) – 100 Marks

- a. Current events of state, national and international importance - 12 marks ✓
- b. History of India and Indian National Movement - 12 marks ✓
- c. Indian and World Geography- Physical, Social, Economic Geography of India and the World - 12 marks ✓
- d. Indian Polity and Governance – Constitution, Political System, Public Policy, Duties & Rights Issues - 12 marks ✓
- e. Economic and Social Development, Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives and other related issues - 12 marks ✓
- f. General issues on Environmental Ecology, Bio-diversity and Climate - 12 marks ✓
- g. General Science - 12 marks ✓
- h. General awareness on Mizo culture, its heritage and society - 16 marks ✓



1. ELECTRICAL ENGINEERING

3. Engineering Paper-I

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a. EM Theory

Electric and magnetic fields, Gauss's Law and Amperes Law, Fields in dielectrics, conductors and magnetic materials, Maxwell's equations, time varying fields, plane-wave propagating in dielectric and conducting media, transmission lines.

b. Electrical Materials

Band Theory, Conductors, Semi-conductors and Insulators, Superconductivity, insulators for electrical and electronic applications, magnetic materials, ferro and ferri magnetism, ceramics, properties and applications, hall effect and its applications, special semi conductors.

c. Electrical Circuits

Circuits elements, Kirchoff's Laws, mesh and nodal analysis, network theorems and applications, natural response and forced response, transient response and steady state response for arbitrary inputs, properties of networks in terms of poles and zeroes, transfer function, resonant circuits, three phase circuits, two-port networks, elements of two-element network synthesis.

d. Measurements and Instrumentation

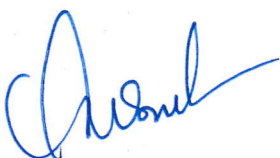
Units and standards, error analysis, measurement of current, voltage power, power-factor and energy, indicating instruments, measurement of resistance, inductance, capacitance and frequency, bridge measurements, electronic measuring instruments, digital voltmeter and frequency counter, transducers and their applications to the measurement of non-electrical quantities like temperature, pressure, flow-rate displacement, acceleration, noise level etc., data acquisition

4. Engineering Paper-II

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a. Control Systems

Mathematical modeling of physical systems, block diagrams and signal flow graphs and their reduction, time domain and frequency domain analysis of linear dynamical system, errors for different type of inputs and stability criteria for feedback systems, stability analysis using Routh-Hurwitz array, Nyquist plot and Bode plot, Root locus and Nicols chart and the estimation of gain and phase margin, basic concepts of compensator design, state variable matrix design, sampled data system and performance of such a system with the samples in the error channel, stability of sampled data system, elements of non-linear control analysis, control system components, electromechanical, hydraulic, pneumatic components.



b. Electrical Machines and Power Transformers

Magnetic Circuits – Analysis and Design of Power transformers, Construction and testing. Equivalent circuits, Losses and efficiency, Regulation, Auto-transformer, 3-phase transformer, Parallel operation.

Basic concepts in rotating machines, EMF, torque, basic machine types. Construction and operation, leakage losses and efficiency.

B.C.Machines, Construction, Excitation methods, Circuit models, Armature reaction and commutation. Characteristics and performance analysis, Generators and motors. Starting and speed control, Testing, Losses and efficiency.

Synchronous Machines, Construction, Principle of operation, Rotating Fields, Characteristics and performance analysis. Synchronous reactance, Efficiency, Voltage regulation, Salient-pole machine, Parallel operation. Hunting, Short circuit transients.

Induction Machines, Construction, Principle of operation, Rotating Fields, Characteristics and performance analysis, Determination of Circuit model, Circle diagram, Starting and speed control.

Fractional KW motors. Single-phase synchronous and induction motors.

c. Power Systems

Types of Power Stations, Hydro, Thermal and Nuclear Stations, Pumped storage plants, Economics and operating factors.

Power transmission lines, Modeling and performance characteristics, Voltage control, Load flow studies, Optimal power system operation, Load frequency control, Symmetrical short circuit analysis, Z-Bus formulation, Symmetrical Components, Per Unit representation, Fault analysis, Transient and steady-state stability of power systems. Equal area criterion.

Power system Transients, Power system Protection Circuit breakers. Relays, HVDC transmission.

5. Engineering Paper-III

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a. Analog and Digital Electronics and circuits

Semiconductor device physics, PN junctions and transistors, circuit models and parameters, FET, Zener, tunnel, Schottky, photo diodes and their applications, rectifier circuits, voltage regulators and multipliers, switching behavior of diodes and transistors.

Small signal amplifiers, biasing circuits, frequency response and improvement, multistage amplifiers and feed-back amplifiers, D.C. amplifiers, coupling methods, push pull amplifiers, operational amplifiers, wave shaping circuits, Multivibrators and flip-flops and their applications. Digital logic gate families, universal gates combinational circuits for arithmetic and logic operational, sequential logic circuits. Counter, Registers, RAM and ROMs.



b. Microprocessors

Microprocessor architecture Instruction set and simple assembly language programming. Interfacing for memory and I/O. Applications of Microprocessors in power system.

c. Communication Systems

Types of modulation: AM, FM and PM. Demodulators, Noise and bandwidth considerations. Digital communication systems, Pulse code modulation and demodulation, Elements of sound and vision broadcasting, Carrier communication. Frequency division and time division multiplexing, Telemetry system in power engineering.

d. Power Electronics

Power Semiconductor devices, Thyristor, Power transistor, GTOs and MOSFETs Characteristics and operation, AC to DC Converters; 1-phase and 3-phase DC to DC Converters. AC regulators. Thyristor controlled reactors; switched capacitor networks.

Inverters; single-phase and 3-phase. Pulse width modulation. Sinusoidal modulation with uniform sampling. Switched mode power supplies.

ELECTRONICS & COMMUNICATION ENGINEERING

3. Engineering Paper-I

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a) Materials and Components:

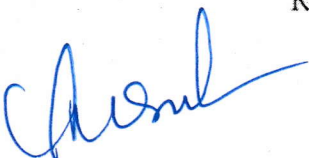
Structure and properties of Electronic materials-Conductors, Semiconductors and Insulators; Magnetic materials-Ferroelectric materials, Piezoelectric materials, Optical and Super-conducting materials; Passive components and characteristics- Resistors, Capacitors and Inductors; Quartz crystal; Ceramic resonators; Electromechanical components.

b) Physical Electronics, Electron Devices and ICs:

Semiconductor Physics-Electrons and holes in semiconductors, Carrier Statistics, Mechanism of current flow in a semiconductor, Hall effect, Junction theory; Different types of diodes and their characteristics; Bipolar Junction transistor; Field effect transistors; Power switching devices like SCRs, CTOs, power MOSFETs; Basics of ICs-bipolar, MOS and CMOS; basics of Opto Electronics.

c) Signals and Systems

Classification of signals and systems: System modeling in terms of differential and difference equations; State variable representation; Fourier series; Fourier transforms and their application to system analysis; Laplace transforms and their application to system analysis; Convolution and superposition integrals and their applications; Z-transform and their application to the analysis and characterization of discrete time systems; Random signals and probability-Correlation functions; Spectral density, Response of linear system to random inputs.



d) Network theory

Network analysis techniques-Network theorems, Transient response, Steady State response; Network graphs and their applications in network analysis; Two port networks; Z, Y, H and transmission parameters. Combination of two ports, analysis of common two ports; Network functions: parts of network functions, obtaining a network function from a given part, elements of network synthesis; Transmission criteria: delay and rise time, Elmore's and other definitions effect of cascading.

4. Engineering Paper-II

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a) Electromagnetic Theory:

Analysis of electrostatic and magnetostatic fields; Laplace's and Poisson's equations; Boundary value problems and their solutions; Maxwell's equations and their application to wave propagation in bounded and unbounded media; Transmission lines-basic theory, standing waves, matching applications, misconstrue lines; basics of wave guides and resonators; Elements of antenna theory.

b) Analog Electronic Circuits:

Transistor biasing and stabilization; Small signal analysis; Power amplifiers-Frequency response, Wide banding techniques; Feedback amplifiers; Tuned amplifiers. Oscillators; Rectifiers and power supplies; Op-Amp PLL, other linear integrated circuits and applications; Pulse shaping circuits and waveform generators.

c) Digital Electronic Circuits:

Transistor as a switching element; Boolean algebra-simplification of Boolean functions, Karnaguh map and applications; IC Logic gates and their characteristics; IC logic families: DTL, TTL, ECL, NMOS, PMOS and CMOS gates and their comparison; Combinational logic Circuits-Half adder, Full adder; Digital comparator; Multiplexer, Demultiplexer; ROM and their applications; Flip flops- R.S, J.K, D and T flip-flops; Different types of counters and registers Waveform generators. A/D and D/A converters. Semiconductors memories.

d) Control Systems:

Transient and steady state response of control systems; Effect of feedback on stability and sensitivity; Root locus techniques; Frequency response analysis-Concept of gain and phase margins, Constant-M and Constant-N circles, Nichols Chart; Approximation of transient response from closed loop frequency response; Design of Control Systems, Compensators; Industrial controllers.



5. Engineering Paper-III

200 Marks (MCQ - 100 marks, Conventional type-100 marks)

a) Communication Systems:

Basic information theory; Modulation and detection in analogue and digital systems; Sampling and data reconstruction; Quantization & coding; Time division and frequency division multiplexing; Equalization; Optical Communication: in free space & fiber optic; Propagation of signals at HF, VHF, UHF and microwave frequency; Satellite Communication.

b) Microwave Engineering:

Microwave Tubes and solid state devices, Microwave generators and amplifiers, Waveguides and other Microwave Components and Circuits, Misconstrue circuits, Microwave Antennas, Microwave Measurements, Masers; Lasers; Microwave propagation; Microwave Communication Systems- Terrestrial and Satellite based.

c) Computer Engineering:

Number Systems; Data representation; Programming; Elements of a high level programming language PASCAL/C; Use of basic data structures; Fundamentals of computer architecture; Processor design; Control Unit design; Memory organization, I/O System Organisation; Mizorprocessors- Architecture and instruction set of Microprocessors; 8085 and 8086, Assembly language Programming; Microprocessor based system design: typical examples- Personal computers and their typical uses.

