**SCHEME AND SYLLABUS FOR RECRUITMENT TO THE POST OF ASST. ELECTRICAL INSPECTORS IN CHIEF ELECTRICAL INSPECTOR TO GOVT. SERVICE**

**Degree Standard:**

<table>
<thead>
<tr>
<th>Part-A: Written (Objective type) Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-1 General Studies &amp; Mental ability</td>
</tr>
<tr>
<td>Paper-2 Subject (Electrical Engineering)</td>
</tr>
</tbody>
</table>

**Part-B: Oral Test (Interview)**
- 50 Marks

**SYLLABUS**

**PAPER-1 GENERAL STUDIES & MENTAL ABILITY**

1. General Science – Contemporary developments in Science and Technology and their implications including matters of every day observation and experience, as may be expected of a well-educated person who has not made a special study of any scientific discipline.
2. Current events of national and international importance.
3. History of India – emphasis will be on broad general understanding of the subject in its social, economic, cultural and political aspects with a focus on AP Indian National Movement.
4. World Geography and Geography of India with a focus on AP.
5. Indian polity and Economy – including the country’s political system- rural development – Planning and economic reforms in India.
6. Mental ability – reasoning and inferences

**PAPER-2 (CONCERNED SUBJECT) ELECTRICAL ENGINEERING**

**I. ELECTRICAL CIRCUITS:**

**II. E.M. THEORY:**
- Electro static and electro magnetic fields, vector methods, Fields in dielectric, conducting and magnetic materials, Laplace and Poisson’s equation. Time varying fields, Maxwell’s equation, Poynting Theory, properties of transmission lines.

**III. ELECTRICAL MEASUREMENT AND INSTRUMENTS:**
- Electrical standards, Error analysis, Measurement of current, voltage, power, energy, power factor, resistance, inductance capacitance frequency and loss angle. Indicating instruments, extension of range of instruments, DC and AC bridges. Electronic measuring instruments. Electronic multimeter, CRO, frequency counter, digital voltmeter, transducers, Thermocouples, Thermistor, LVDT, strain gauges, Piezo electric crystal, Measurement of non-electrical quantities like, pressure, velocity, temperature, flow rate, displacement acceleration and strain.

**IV. CONTROL SYSTEMS**
V. **ELECTRONICS:**

Solid state devices and circuits. Small and large signal-amplifiers with and without feedback at audio and radio frequency, multistage amplifiers. Operational amplifiers and applications. Integrated circuits oscillators, RC, LC and crystal oscillators wave form generators, multi-vibrators – Digital circuits, Logic gates, Boolean algebra combinational and sequential circuits. A to D and D to A converters Micro processors (8085) instruction set, memories, interfacing programmable peripheral devices – Number system flow charts – expressions and statements in C – language – simple programs for engineering application.

VI. **D.C. ELECTRICAL MACHINES:**

Fundamentals of electro mechanical energy conversion, constructional features of D.C. Machines, emf equation types and characteristics of generators application, Torque in DC motor, types of DC motors, applications. Testing of D.C. motors, efficiency, and starting and speed control.

VII. **TRANSFORMERS:**


VIII. **INDUCTION MOTORS:**

Production of rotating magnetic field, production of torque types of motors equivalent circuits, Circle diagram, torque slip characteristics, starting and maximum torque, speed control, principle of single phase induction motors, Applications.

IX. **SYNCHRONOUS MACHINES:**

Generation of emf in 3 phase AC Generator, Armature reaction, regulation by Synchronous impedance and Ampere turn methods, parallel operation, transient and sub-transient reactances, theory of salient pole machines.

Synchronous Motor: Torque production, performance characteristics, methods of starting, V-Curves, synchronous condenser.

Special Machines: Stepper motor, Methods of operation, Amplidyne and metadyne-applications.

X. **ELECTRICAL POWER GENERATION:**

General layout – Types of power stations, economics of different types, base load and peak load stations, load factor and its effects, pumped storage schemes.

XI. **POWER TRANSMISSION:**

Calculation of line parameters, concepts of short, medium and long transmission lines, ABCD parameters, insulators, Corona, P.U. quantities, fault calculations, symmetrical components load flow analysis using Gauss Seidal, New-ton Raphson, methods, economic operation, stability, steady state and transient stability, equal area criterion, ALFC and AVR control for real time operation of interconnected systems.

XII. **POWER SYSTEM PROTECTION:**


XIII. **UTILISATION:**


Sd/- Secretary