

KERALA PUBLIC SERVICE COMMISSION
DETAILED SYLLBUS FOR THE POST OF ELECTRICIAN GR.II IN
PRINTING DEPARTMENT

(CATEGORY NO.771/2025)

(TOTAL 100 MARKS)

Module 1: Basic Electronics (5 Marks)

Active and Passive components, Resistors, Resistor types, Resistor colour code, Capacitors, Types of capacitors, , Resistors in series, Resistors in parallel, Series and parallel connection of capacitors, Inductors.

Module 2: Power Supply Circuits (5 Marks)

Intrinsic and extrinsic semiconductor, PN junction diode, Forward and Reverse characteristics, Specification of diodes, Special semiconductor diode: Zener diode, tunnel diode, Rectifiers: Half wave rectifier, Full wave rectifier (bridge & center tapped), , Filters: Introduction, purpose and use of ripple filter, Types of filters: capacitor filter & Inductor filter, Voltage regulators: Introduction & purpose, Zener regulators, , Series regulators.

Module 3: Transistor & Amplifiers (5 Marks)

Transistors, NPN & PNP transistor, Symbol, Operation, Input and output characteristics, Biasing of transistor, Transistor CB, CC, CE configurations, current gain, voltage gain, and power gain. Amplifiers: Classification of amplifiers, Voltage amplifiers, Single stage CE amplifier, Emitter follower circuit, RC coupled amplifier, Voltage and power amplifier.

Module 4: Oscillators (5 Marks)

Oscillators: Basic working principle, Introduction to positive feedback, Requisites of an oscillator, LC oscillators and RC oscillators, Colpitts oscillator, Hartley oscillator, Crystal oscillator, RC phase shift oscillator, Wien bridge oscillator, Multivibrators: Astable multivibrator, Monostable multivibrator, and Bistable multivibrator.

Module 5: Digital Electronics (5 Marks)

Number systems: Decimal number system, Binary number system, Octal number system, Hexadecimal number system, BCD code, Numbersystem Conversions: Binary to decimal conversion, Decimal to binary conversion, Decimal to octal conversion, Octal to binary conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion, Logic gates: OR gate, AND gate, NOT gate, NAND gate, NOR gate, XOR gate, Logic families and their comparison.

Module 6: Communication Electronics (5 Marks)

Communication system, Radio wave propagation, Modulation and Demodulation, Types of modulation, Amplitude Modulation (AM), Modulation index, Types of AM, Bandwidth in AM, Frequency Modulation (FM), Modulation index in FM, Bandwidth in FM, Phase Modulation (PM), Digital modulation techniques , Superheterodyne AM receiver. Basics of Mobile communication.

Module 7: DTH & Cable TV (5 Marks)

Satellite communication- introduction, Electromagnetic spectrum and Frequency bands in Satellite communication, DTH -introduction, DTH Terminology and components, Dish assembly, Mount Assembly, Basics of Digital cable technology, Headend system & Distribution Network, Multiplay digital services, FTTH.

Module 8: UPS and Inverters (5 Marks)

UPS: Introduction, Block diagram of UPS, Working principle of UPS, Types of UPS, Inverter: Introduction to inverter, Block diagram of inverter, Working principle, Applications.

Module 9: Solar Power (5 Marks)

Solar energy principles, Solar cell, Solar cell materials, Types of solar cells, Working of solar cell, Photovoltaic module, Photovoltaic array, Solar Photovoltaic (SPV) system, Safety precautions in solar electric system, Maintenance of solar electric system.

Module 10: Electronic Home Appliances (5 Marks) Basic principle, Working and operation of LCD TV and LED TV, Home Theater Audio speaker- type and features, Blue tooth and Wireless connectivity, LED light system, LED bulbs, Emergency lamp, Induction cooktop.

Module – 11 (5 Marks)

Basic Electricity And Safety Practice

Safety rules, Fire, types of fire

Fundamentals of electricity,

Soldering techniques and flux

Conductor, Insulator, Semiconductor

Types of wires and cables

Ohm's law Kirchhoff's law

DC series and parallel circuits,

Open and short circuits,

Laws of resistance

Methods of measuring low, medium, high value resistances,
Effect of temperature on resistance.

Module – 12 (5 Marks)

Magnetism

Types of magnets,

Classification of magnetic substances,

Properties and different terms related to magnets

Methods of magnetizing, Electromagnetism ,

Right hand grip rule and palm rule,

Mmf, flux, reluctance, flux density, permeability,

Hysteresis

Inductance, counter emf

Faraday's laws of electromagnetic induction

Module – 13 (5 Marks)

Alternating Current and Earthing

Alternating current,

Inductive reactance ,capacitive reactance,impedance,power factor

RLC series and parallel circuits

Series and parallel resonance circuits

Power triangle, power factor improvement

Wiring accessories

Types of wiring both domestic and industrial Grading of cable and wires Current rating, Testing of domestic installation

Earthing, types of earthing

Module – 14 (5 Marks)

DC Machines

DC Generators and Types

Emf equation of DC generator

DC series, shunt and compound Generator DC motors and types

Back emf

DC motor starters 3 point, 4 point

Speed control methods of DC machine Braking of DC motors

Losses and efficiency

Module – 15 (5 Marks)

AC Machines

Principle of induction motor

Types of AC motors

DOL, Star delta, rotor resistance motor starter

Auto transformer starter

No load and blocked rotor test

Speed control of AC motors Types of Single phase motors
Alternator

Emf equation of Alternator Synchronous motor

Module – 16 (5 Marks)

Measuring Instruments and Transformers

Measuring Instruments and classification

Indicating,integrating,recording instruments

Deflecting torque,Controlling torque and Damping Torque Two
wattmeter method of power measurement

Megger ,earth tester Instrument transformers Range extension of
meters Basic principle of Transformer

Parts and classification of transformer Emf equation of
transformers

Parallel operation of Transformers Voltage regulation and
efficiency Methods of Cooling,

Protective Devices

Module – 17 (5 Marks)

Illumination and Domestic Appliances

Terms used in illumination

Laws of illumination Types of lamps Domestic appliances

Geyser ,electric iron,food mixer,cooking range,induction
cooker,grinder

Module – 18 (5 Marks)

Types of relays and circuit breakers

Classification of relays,

Types of relay, Over current relay,

Over voltage relay,

Under voltage relay

Differential relay,

Earth fault relay,

Distance relay , Admittance relay

Impedance relay, Reactance relay

Air circuit breaker

Vacuum circuit breaker

SF6 circuit breaker

Module – 19 (5 Marks)

Power Generation and Transmission

Sources of energy Generation

Various types of power generation Transmission and Distribution

Electrical substation

Non conventional sources of power generation Line insulators

AC and DC transmission comparison

Module – 20 (5 Marks)

Cells And Batteries - Control panel wiring

Chemical effect of electricity

Faraday's laws of electrolysis

Types of Primary and secondary cells Cathodic protection in electroplating Grouping of cells

Solar cells

Control panel wiring accessories

AC/DC drives

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.