

**ASSISTANT ENGINEER - ELECTRICAL (BY TRANSFER RECRUITMENT)  
KERALA STATE ELECTRICITY BOARD – CATEGORY NO: 381/2008**

**1. ELECTRICAL ENGINEERING FUNDAMENTALS**

Electrical energy- different forms of generation- static - dynamic-electromagnetic induction - magnetic circuits- electrostatic circuits - capacitors -energy stored in magnetic and electric circuits - self induction and mutual induction - inductance-alternating currents - r m s values - waveforms -Ohms laws- Kirchhoff s laws - Thevenin's theorem

**2. ELECTRICAL CIRCUITS AND MEASUREMENTS**

Circuit elements - voltage and current sources- R L C elements- mesh analysis and nodal analysis for d c and ac circuits - impedance - phase lead and lag -power factor-power in ac circuits - measurement of ac and dc voltage and current- measurement of power in single phase and three phase circuits using watt meters - power factor meters

**3. ELECTRICAL MACHINES**

AC and DC Machines - constructional details - different types of turbines -Equation for induced emf in DC machines - torque in DC Motors - starting and speed control - AC Machines - synchronous speed- synchronous and induction machines - induced emf- starting of induction motors - star delta and direct on line starters-.applications of different ac motors- transformers

**4. POWER SYSTEMS**

Generation of power - different methods- comparison of hydroelectric thermal and atomic power stations- need for high voltage transmission - transmission lines - voltage drops and voltage regulation and regulators - transient and steady state stability - stability limits- lightning protection

**5. BASIC ELECTRONICS**

P and N type semiconductors PN junction diodes - forward reverse bias-transistors - PNP and NPN - static characteristics - different connections -common emitter- base and collector connections - comparison - power transistors - thyristors - and power semiconductor devices.

**6. ANALOGUE ELECTRONICS**

Amplifiers - feedback direct coupled - differential- voltage and power amplifiers-Gain and band width - comparison of different amplifiers - figure of merit-operational amplifiers - special features of opamps and applications

## **7. DIGITAL ELECTRONICS**

Fundamentals of digital circuits - sampling and choice of sampling frequency-Logic circuits - Flip flops - adders - registers - truth tables - Boolean algebra - binary arithmetic- analogue to digital conversion

## **8. COMMUNICATION**

Different methods - through wires and wireless - analogue and digital communication - advantages and disadvantages - methods of wireless transmission - frequency ranges - range of transmission - microwave and satellite links - optical communication - special features.

## **9. CONTROL SYSTEMS**

Open loop and closed loop control - comparison - advantages- transfer function model- state space model - time response - damping - overshoot-settling time - stability -location of roots of characteristic equation - eigen values

## **10. COMPUTER FUNDAMENTALS**

Analogue and digital computers - comparison- input units - memory units -ROM and RAM - cache memory - processors - CPU - clock speed - arithmetic and logic units - programming languages - high level and low level - machine and assembly languages - object programs and source programs

## **11. COMPUTER APPLICATIONS**

High level languages - different types - internet - world wide web - different connections - dial up - broad band - modems - protocols - web browsers -linux and free and open source software - Computer Aided Design tools-Basics of Computer graphics and animations

**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.**