RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SCHEME & SYLLABUS FOR THE POST OF ASSISTANT
CONSERVATOR FOREST & FOREST RANGE OFFICER GRADE 1st
COMPETITIVE EXAMINATION, 2018
FOREST DEPARTMENT

OPTIONAL SUBJECT - ELECTRICAL ENGINEERING


2. **Electrical Machines**: Basic concept of rotating machines - e.m.f and torque equation, principle of energy conversion. DC Machines - characteristics, armature reaction, commutation, speed control of DC Motor, testing of DC Machine. Single phase and three phase transformers - phasor diagram, losses, regulation and efficiency, parallel operation of transformer, poly phase connection of transformers, Three phase induction machine - torque slip characteristics, efficiency, tests, applications, single phase induction motor - principle, starting methods, characteristics, applications, special machines. Synchronous machine - phasor diagram, voltage regulation, V-curves, synchronizing power, starting of synchronous motor, parallel operation and application.


4. **Control System**: Open and closed loop systems. Block diagrams and signal flow graphs, transfer function, transient and steady state response, time domain analysis, frequency domain analysis; steady state error analysis. Root locus technique, bode plots, Routh-Hurwitz, and Nyquist criteria of stability, Compensating network, State variable representation and analysis of control systems.
5. **Power systems:** conventional and non conventional generating plants, Supply system, modelling of transmission lines, Distribution system, Neutral earthing. Underground Cables, Corona, power system stability, Line insulators, introduction to HVDC transmission, protective devices and schemes for power system equipment, per unit quantities, Symmetrical components, fault analysis, bus admittance and impedance matrix, load flow study, voltage control and power factor correction, economic operation of power system, grid substation.

6. **Microprocessor systems and computer:** Microprocessor architectures, Instruction set and simple assembly language programming, interfacing memory and I/O devices. Applications of microprocessors. Basic layout of digital computers, input-output devices, memory organisations, algorithms, flowcharts, Basic concepts of C++ programming.


Note: - **Pattern of Question Paper**  
  1. Objective type paper  
  2. Maximum Marks : 200  
  3. Number of Questions : 120  
  4. Duration of Paper : Three Hours  
  5. All questions carry equal marks.  
  6. There will be Negative Marking.