SYLLABUS FOR THE POST OF LECTURER (TECHNICAL)

Subjects : Electrical Engineering

1. **Basic Electrical Engineering:** DC networks, Magnetic Circuits, Single phase and poly-phase AC circuits, Measuring instruments, Basics of Electrical Installations.

2. **Basic Electronics:** PN junction diode, Bipolar Junction Transistor, Multi-stage BJT amplifiers. Field-effect transistors.

3. **Electrical Circuit Analysis:** Sinusoidal Steady State Analysis, Circuit Transients, Network Functions, Two port networks, Non-sinusoidal periodic waves, Graph theory.

4. **Digital System and Logic Design:** Realization of gates, Representation of Informations, Boolean algebra and logic functions, Combitional and Sequential logic circuits.

5. **Electrical Measurements:** Ammeters, Voltmeters, Ohmometers, Wattmeters & Energymeters. Instrument Transformers, Oscillators, Electronics Instruments, Recorders.

6. **Power System:** Over head Line transmission, Under ground cables, AC & DC distribution, symmetrical components, transients and short circuit fault analysis, stability studies, economic operation of power system, Short circuit studies using Z-bus, system interconnection and control, nuetral grounding, circuit breakers and relays, electrical substation layouts, corona & RI characteristics, HVDC transmission.

7. **Electromagnetic Field Theory:** Vector analysis, Electrostatics in vacuum and dielectrics. Boundary value problems, Magneto static field, Electromagnetic field, Time varying fields. Plane electromagnetic fields.

8. **Advanced Electronics:** Transistor oscillators, Linear & non-linear application of operational amplifiers, Active filters.

9. **Electrical Engineering Materials:** Conductor, semi-conductor, Magnetic and Di-electric materials.

10. **Electrical Machines:** DC & AC motors, DC & AC generators, Transformers, single and poly-phase induction machines, AC commutator motors, two reaction analysis of salient poles machines, sudden short circuit of synchronous generators.

11. **Communication Engineering:** Signals and spectra, Random signals and noise, Modulation & detection, Electromagnetic wave propagation.

12. **Microprocessors:** Microprocessors architecture, programming of 8085 microprocessors, interfacing peripheral chips 8255, 8253, 8279, 8259. 8251, 8257.

13. **Power Electronics:** Semiconductor power devices, rectifying circuits, inverters. chopper, cycloconverter, AC voltage controllers, Power supplies.

14. **Automatic Control System:** SISO, MIMO, time invariant & time varying systems, Mathamatical modelling of physical systems, SFG & Block diagram representation of systems, Transient and frequency response analysis, Root locus & State Space techniques, Design and compensation techniques.

15. **Machines Drives:** Starting and Braking, solid state controllers, Electric Traction, Industrial Applications, Electric Heating & Weilding.