

## **17PS1209 - REACTIVE POWER CONTROL**

Instruction/week: 4 hrs.  
Univ. Exam: 3 hrs.

Max. Sessional marks: 40  
Univ. Exam marks: 60

### **UNIT-I**

**INTRODUCTION:** Reactive requirements of a transformer, magnetizing MVAR requirements of transformer, tap changing in transformers, Effect of reactive loading on distribution transformers, generation of harmonics, distribution lines. Reactive capability of a synchronous generator, capacitors, static converters.

### **UNIT-II**

Stability of a power system, criteria for stability, effect of capacitors on a stability load ability of a line, dynamic voltage stability, transient stability, dynamics of load characters, varieties of static var controllers.

### **UNIT-III**

**REACTIVE POWER PLANNING IN DISTRIBUTION SYSTEM:** Planning of distribution system, Economic justification for reactive power planning, Zonal reactive power requirements- EHV and UV Low tension capacitors, placement in distribution substation and upside capacitors, retrofitting of capacitor banks.

### **UNIT-IV**

**REACTIVE POWER MANAGEMENT:** Lighting loads total reactive power requirement of lighting load in India, Harmonics, and other loads.

### **UNIT-V**

**REACTIVE POWER PLANNING:** Controls of LT capacitor bank, types of automatically controlled relays, basic disadvantages by power factor of control, susceptibilities of APFC relays, different methods of harmonic reduction,; shunt capacitors, tuned capacitor filters, damped fitters, fitting efficiencies, filters on LT & HT networks.

### **TEXT BOOKS:**

1. "Reactive Power Management" by D M Tagare, Tata McGraw-Hill Education in 2011

### **REFERENCES:**

1. "Reactive power control in Electric power systems" by T.J.E.Miller, John Wiley and sons, 1982