

UNIT I UPS AND SOLID-STATE CIRCUITS**9**

Review of switching regulators and switch mode power supplies-Uninterrupted power supplies-off-line and on-line topologies – Analysis of UPS topologies – solid-state circuit breakers – solid-state tap-changing of transformer

UNIT II ANALOG AND DIGITAL CONTROLLERS**9**

Analog Controllers - Proportional controllers, Proportional – Integral controllers, PID controllers, derivative overrun, integral windup - cascaded control - Feed forward control – Digital control schemes – control algorithms - programmable logic controllers.

UNIT III SIGNAL CONDITIONERS**9**

Signal conditioners-Instrumentation amplifiers – voltage to current, current to voltage, voltage to frequency, frequency to voltage converters ; Isolation circuits – cabling; magnetic and electro static shielding and grounding.

UNIT IV OPTO-ELECTRONICS**9**

Opto-electronic devices and control – electronic circuits for photo-electric switches – output signals for photo-electric controls; Applications of opto-isolation, interrupter modules and photo sensors – Fibre optics – Bar code equipment, application of barcode in industry.

UNIT V STEPPER MOTOR AND SERVO MOTOR**9**

Stepper motors - types, operation, control and applications; Servo-motors - types, operation and control; applications – servo motor controllers – servo amplifiers – linear motor applications - selection of servo motor.

TOTAL: 45 PERIODS**REFERENCES:**

1. Michael Jacob, “Industrial Control Electronics – Applications and Design”, Prentice Hall, 1988.
2. Thomas, E. Kissel, “Industrial Electronics”, Third edition, Prentice Hall of India, 2003
3. Singh.M.D and Khanchandani.K.B, “Power Electronics”, TMH, New Delhi, 2006.