RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Electrical & Electronics Engineering, V-Semester

Open Elective EX- 504 (A) Industrial Electronics

Unit-I

Power supply, rectifiers (half wave, full wave), performance parameters of power supplies, filters (capacitor,inductor, inductor-capacitor, pi filter), bleeder resistor, voltage multipliers .Regulated power supplies (series and shunt voltage regulators, fixed and adjustable voltage regulators,current regulator), switched regulator (SMPS), comparison of linear and switched power supply, switchmode converter (flyback, buck, boost, buk-boost, cuk converters).

Unit-II

Silicon controlled rectifies (SCR), constructional features, principle of operation, SCR terminology, turn-onmethods, turn-off methods, triggering methods of SCR circuits, types of commutation, comparison ofthyristors and transistors, thermal characteristics of SCR, causes of damage to SCR, SCR overvoltageprotection circuit, Line commutated converters (half wave rectifier withinductive and resistive load, single phase and three phase full wave rectifiers).

Unit-III

Other members of SCR familyTriacs, Diacs, Quadracs, recovery characteristics, fast recovery diodes, power diodes, power transistor,power MOSFET, Insulated gate bipolar transistor (IGBT), loss of power in semiconductor devices,comparison between power MOSFET, power transistor and power IGBT.

Unit-IV

Applications of OP-AMPBasics of OP-AMP, relaxation oscillator, window comparator, Op-comp as rectangular to triangular pulseconverter and vice- versa, Wien bridge oscillator, function generator, frequency response of OP-AMP,simplified circuit diagram of OP-AMP, power supplies using OP-AMP, filters (low-pass, high pass) using OP-AMP

Unit-V

Programmable Logic Controller (PLC)Functions, applications, advantages and disadvantages of PLC over conventional relay controllers,comparison of PLC with process control computer system, factors to be considered in selecting PLC,functional block diagram of PLC, microprocessor in PLC, memory, input and output modules (interfacecards), sequence of operations in a PLC, status of PLC, event driven device, ladder logic language, simpleprocess control applications of PLC, Programming examples..

REFERENCE BOOKS

1. Bishwanath Paul: Industrial Electronics and control, PHI Learning.
2. Rashid: Power Electronics- Circuits, devices and applications, Pearson Education.
3. Singh and Khanchandani: Power Electronics, TMH
4. Bhimbra: Power Electronics, Khanna Publishers.
5. Moorthi: Power Electronics, Oxford University Press.
6. Webb: Programmable Logic Controllers- Principles and Applications, PHI Learning.