**Circuit Analysis**

**Week No: 01**

Electric quantities, electric signals, electric circuits, Kirchhoff's laws, circuit elements. Resistance, series parallel combination, voltage and current dividers, resistive bridges and ladders, practical sources and loading, instrumentation and measurement.

**Week No: 02**

Electric quantities, electric signals, electric circuits, Kirchhoff's laws, circuit elements. Resistance, series parallel combination, voltage and current dividers, resistive bridges and ladders, practical sources and loading, instrumentation and measurement.

**Week No: 03**

Nodal analysis, loop analysis, linearity and superposition, source transformation, one ports, circuit theorems, power calculations.

**Week No: 04**

Nodal analysis, loop analysis, linearity and superposition, source transformation, one ports, circuit theorems, power calculations.

**Week No: 05**

Nodal analysis, loop analysis, linearity and superposition, source transformation, one ports, circuit theorems, power calculations.

**Week No: 06**

Nodal analysis, loop analysis, linearity and superposition, source transformation, one ports, circuit theorems, power calculations.

**Week No: 07**

Dependent sources, circuit analysis with dependent sources, ideal transformer, amplifiers. The operational amplifier, basic op-amp configurations, ideal op-amp circuit analysis, summing and difference amplifiers, amplifier types.

**Week No: 08**

Dependent sources, circuit analysis with dependent sources, ideal transformer, amplifiers. The operational amplifier, basic op-amp configurations, ideal op-amp circuit analysis, summing and difference amplifiers, amplifier types.

**Week No: 09**

Dependent sources, circuit analysis with dependent sources, ideal transformer, amplifiers. The operational amplifier, basic op-amp configurations, ideal op-amp circuit analysis, summing and difference amplifiers, amplifier types.

**Week No: 10**

Dependent sources, circuit analysis with dependent sources, ideal transformer, amplifiers. The operational amplifier, basic op-amp configurations, ideal op-amp circuit analysis, summing and difference amplifiers, amplifier types.

**Week No: 11**

Capacitance, inductance, natural response of RC and RL circuits. Response to DC forcing function. Transient response of first order circuits, step, pulse and pulse train responses, first order op-amp circuits. Transient response and step response of second order circuits.

**Week No: 12**

Capacitance, inductance, natural response of RC and RL circuits. Response to DC forcing function. Transient response of first order circuits, step, pulse and pulse train responses, first order op-amp circuits. Transient response and step response of second order circuits.

**Week No: 13**

Capacitance, inductance, natural response of RC and RL circuits. Response to DC forcing function. Transient response of first order circuits, step, pulse and pulse train responses, first order op-amp circuits. Transient response and step response of second order circuits.

**Week No: 14**

AC fundamentals; RMS or effective, average and maximum values of current & voltage for sinusoidal signal wave forms, introduction to phasor representation of alternating voltage and current, single phase circuit analysis, star-delta transformation for DC and AC circuits.

**Week No: 15**

AC fundamentals; RMS or effective, average and maximum values of current & voltage for sinusoidal signal wave forms, introduction to phasor representation of alternating voltage and current, single phase circuit analysis, star-delta transformation for DC and AC circuits.

**Week No: 16**

AC fundamentals; RMS or effective, average and maximum values of current & voltage for sinusoidal signal wave forms, introduction to phasor representation of alternating voltage and current, single phase circuit analysis, star-delta transformation for DC and AC circuits.

**Recommended Books:**

1. Electric Circuits Fundamentals, S. Franco, Oxford University Press, (Latest edition).
2. The Analysis and Design of Linear Circuits by R E Thomas, A J Rosa and G J Toussaint, John Wiley, 6th Edition, 2009
3. Fundamentals of Electric Circuits by C Alexander and M Sadiku, McGraw Hill, 4th Edition, 2008
4. Basic Engineering Circuit Analysis by J D Irwin and R M Nelms, Wiley, 9th Edition, 2008.
5. Engineering Circuit Analysis by W Hayt, J Kemmerly and S Durbin, McGraw Hill, 7th Edition, 2007.