PPH205: ELECTRONICS

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Course Objectives: To introduce students to entire circuit designs, and to provide in-depth theoretical base of Digital Electronics.

Linear Wave Shaping: High Pass RC circuits: Its response to step, Pulse, Square wave, Ramp, exponential waveforms, Its application as a Differentiator. Low pass RC Circuit: Its response to step, pulse, Square wave, Ramp, Exponential wave forms, Its application as an integrator.

Clipping and Switching Circuits: Non Linear Wave Shapers, Diode Clippers, Positive and Negative Clippers, Combinational and Biased clippers, Transistor Clipper.

Clamping and Switching Circuits: Operation of Clamping Circuits, Clamping Circuit theorem, Practical Clamping Circuit theorem, Operation of Transistor as a switch.

Logic Systems: Basic Concepts of dc positive and negative logic systems, Dynamic logic systems, OR gate and AND gate, NOT gate, NAND gate, EX-OR gate, NOR gate & their applications, Response to input pulse operation. TTL (transistor transistor logic) and DTL (diode transistor logic)

Multivibrators: Solid state switching circuits, A bistablemultivibrator-basic concept of its operation. Symmetrical and Unsymmetrical triggering, Application (brief). MonostableMultivibrator, Basic concepts of its operation, quantitative discussion of Quasi stable state, Application, Astablemultivibrator - basic concepts of operation.

Analog Systems: Operational Amplifier, Differential Amplifier, Transfer Characteristics, Frequency Characteristics, IC Operational Amplifier, Compensation in Operational Amplifiers, Application of OP-AMP as adder, Multiplier, Differentiator, Integrator, Log and Antilog Amplifier, Application of

Course Learning Outcomes (CLO):

Students will have understanding of:

1. fundamental designing concepts of different types of Logic Gates, Minimization techniques etc.
2. designing of different types of the Digital circuits, and to give the computational details for Digital Circuits.
3. characteristics of devices like PNP, and NPN junction diode and truth tables of different logic gates.
4. basic elements and to measure their values with multimeter and their characteristic study.

Recommended Books:

1. *Millman, J. and Taub, H., Pulse Digital and Switching Wave forms, Tata McGraw Hill, (1991).*
2. *Boylestad, R.L. and Nashelsky, L., Electronic Devices and Circuit Theory, Prentice Hall of India, (2007).*
3. *Bell, D.A., Electronics Devices and Circuits, Oxford University, (2008).*