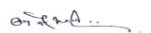


TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Credits	Marks			Duration of End Semester Examination
L	T	P/D	C	Sessional	End Semester Exam	Total	
3	1	0	4	40	60	100	3 hrs

COURSE CONTENT:

Unit	Contents	No. of hours
I	<p>Semiconductors: Energy band concept of materials, difference between metal, insulator and semiconductor, Intrinsic and extrinsic semiconductors (n-type & p-type), current conduction in semiconductor, Photodiode, photo-transistor, LED and seven-segment display.</p> <p>Semiconductor Diodes: p-n junction diode, Depletion layer, Energy diagrams of p-n junction and depletion region, Biasing of diode and V-I Characteristics; Rectifiers - half-wave, full-wave and bridge rectifiers; Filters - L, C, LC and π filters; Zener diode, V-I Characteristics and Zener diode as voltage regulator.</p>	8
II	<p>Bipolar Junction Transistors (BJT): Transistor operation and current components in p-n-p and n-p-n transistors, input/output characteristics of CB and CE configurations, Transistor as an Amplifier, transistor cutoff, saturation and active regions, Transistor biasing and bias stabilization: Operating point, Stability factor, Analysis of fixed bias, collector to base bias, Emitter resistance bias circuit and self bias circuit</p> <p>Field Effect Transistors (FET): Basic construction, transistor action, concept of pinch off, maximum drain saturation current, input and transfer characteristics, MOSFET: Depletion and enhancement type MOSFET- Construction, operation and characteristics.</p>	8
III	<p>Oscillators: Introduction, Criteria for oscillation, types of oscillators Hartley, Colpitt, RC Phase shift and Wein bridge oscillators.</p> <p>Operational Amplifiers: Concept of ideal operational amplifiers, ideal operational amplifier parameters, inverting, non-inverting and unity gain amplifiers, adders and subtractor, Differentiator, integrator and Comparator operational amplifiers</p>	8
IV	<p>Number System and Logic Design: Number systems, Conversions and code, conversion of bases(decimal, binary, octal and hexadecimal numbers), addition and subtraction, Boolean algebra, logic gates (AND, OR, NAND, NOR, XOR, XNOR), concept of universal gate.</p> <p>Electronic Instruments: Operation of CRO and its applications, Signal Generator, measurement of voltage, phase and frequency using CRO.</p>	8


 Dean - Academic
 H.P. Technical University
 Hamirpur - 177 001, HP

Textbooks:

- Boylestad, R. L. and Nashelsky, L., Electronic Devices & Circuit Theory, Pearson (2009).
- M. M. Mano and M. D. Ciletti, Digital Design, Pearson, Prentice Hall, 2013.

Reference Books:

- Milliman, J. and Halkias, C. C., Electronic Devices and Circuits, Tata McGraw Hill, 2007.
- Donald D Givone, Digital Principles and Design, McGraw-Hill, 2003.
- John FWakerly, Digital Design: Principles and Practices, Pearson, (2000).
- N Storey, Electronics: A Systems Approach, Pearson, Prentice Hall, (2009).