Meerut Institute of Engineering and Technology, Meerut			
CO-wise Syllabus			
1	CO-1	Statement	Apply the concept of P-N junction and devices in Electronic circuits.
		Syllabus	***Semiconductor Diode:*** Depletion layer, V-I characteristics, ideal and practical Diodes, Diode Equivalent Circuits, Zener Diodes breakdown mechanism (Zener and avalanche) ***Diode Application:*** Diode Configuration, Half and Full Wave rectification, Clippers, Clampers, Zener diode as shunt regulator, Voltage-Multiplier Circuits
2	CO-2	Statement	Explain the concept of BJT, FET and MOFET.
		Syllabus	***Bipolar Junction Transistor:*** Transistor Construction, Operation, Amplification action. Common Base, Common Emitter, Common Collector Configuration ***Field Effect Transistor:*** Construction and Characteristic of JFETs. Transfer Characteristic. MOSFET (MOS) (Depletion and Enhancement) Type, Transfer
3	CO-3	Statement	Apply the concept of Operational amplifier to design linear and non-linear applications.
		Syllabus	***Operational Amplifiers:*** Introduction, Op-Amp basic, Practical Op-Amp Circuits (Inverting Amplifier, Non-inverting Amplifier, Unit Follower, Summing Amplifier, Integrator, Differentiator).Differential and Common-Mode Operation, Comparators.
4	CO-4	Statement	Perform number systems conversions, binary arithmetic and minimize logic functions.
		Syllabus	***Digital Electronics:*** Number system & representation, Binary arithmetic, Introduction of Basic and Universal Gates, using Boolean algebra simplification of Boolean function. K Map Minimization upto 6 Variables.
5	CO-5	Statement	Describe the fundamentals of communication technologies.
		Syllabus	***Fundamentals of Communication Engineering:*** Basics of signal representation and analysis, Electromagnetic spectrum Elements of a Communication System, Need of modulation and typical applications, Fundamentals of amplitude modulation and demodulation techniques. ***Introduction to Wireless Communication:*** Overview of wireless communication, cellular communication, different generations and standards in cellular communication systems, Fundamentals of Satellite & Radar Communication.

B.Tech First Year: Regular Course Lecture Plan Session 2022-23

Subject Name	Fund. Of Electronics Engg. (BEC 101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
CO-1	Semiconductor Diode, Diode Application & Special Purpose two terminal Devices	Introduction of Semiconductors: Intrinsic & Extrinsic Semiconductors, Types of currents, Movement of electrons & holes etc.	1
		Working of semiconductor diode in no bias, forward bias conditions & reverse bias condition	2
		Explanation of diode equation, V/I characteristics of pn junction diode, Analysis of effect of temperature on different parameters of diode	3
		Problems based on diode equation and temperature effect, Illustration of ideal and simplified circuit representation of diode based on approximations	4
		Problems based on series & parallel circuits of diodes	5
		Explanation of two breakdown conditions under reverse bias conditions, Zener diode As Shunt voltage regulator	6
		Problems based on voltage regulator	7
		Working of Half wave and Full wave rectifiers	8
		Different parameters of rectifiers and comparison between rectifiers on basis of these parameters	9
		Numericals based on rectifiers	10
		Different types of clampers and steps to draw their waveforms, Problems based on clampers	11
		Voltage multiplier	12
		Clippers: Introduction,types and problems	13
		Special Purpose diodes	14
CO-2	Bipolar Junction Transistor and Field Effect Transistor	Illustration of meaning of word transistor, its classification, introduction of structure of BJT, Explanation of current flow in BJT, Conditions for different regions of operation and their uses	15
		Introduction of CB Configurations of BJT: Structure, Current gain, Input Characteristics, Output Characteristics	16
		Output Characteristics of CB configuration (Contd.), CE configuration: Structure, Current gain, Input characteristics	17
		Output characteristics of CE Configuration, Comparision between different configurations of BJT on the basis of different parameters, Numericals based on BJT	18
		Introduction of FET, Classification of FET, Introduction of JFET, Output & transfer characteristics of n channel JFET.	19
		Use of JFET as VVR, Different parameters of JFET. Introduction of DMOSFET, Output and Transfer characterics of DMOSFET	20
		Introduction of EMOSFET and its output and transfer characterics), Comparision between BJT & FET & Comparison between JFET, DMOSFET & EMOSFET.	21

B.Tech First Year: Regular Course Lecture Plan Session 2022-23

Subject Name	Fund. Of Electronics Engg. (BEC 101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
CO-3	Operational Amplifiers	Introduction of Opamp: Block diagram, Differential and common mode operation	22
		Ideal and practical parameters of opamp	23
		Non-inverting and inverting OPAMP, OPAMP as an adder, subtractor	24
		Integrator & differentiator, Comparator	25
		Numerical Problems based upon Op-Amps	26
		Numerical Problems based upon Op-Amps	27
CO-4	Digital Electronics	Introduction of Number system and conversion among them	28
		Introductionof Booloean Algbra, different laws and their use in function Boolean minimization	29
		Introduction of Logic gates, Universal Gates, Realization of basic gates using universal gates	30
		SOP and POS and Canonical form representation	31
		Introduction of K Map: 2&3 Varaible	32
		K map: Don’t care condition, 4 Variable	33
		K Map: 5 & 6 Variable K map, Numericals on K map	34
CO-5	Fundamentals of Communication Engineering & Introduction to Wireless Communication	Introduction of Communication system, different components of the system and their importance.	35
		Introduction of modulation and its need, Amplitude modulation: Expression, modulation index, Power and current relation of AM	36
		Moulator and demodulator Techniques of AM, Numericals problem based on AM	37
		Overview of wireless communication, Cellular communication	38
		Different generations and standards in cellular communication systems	39
		Introduction of Radar & Satellite Communication and its basic principles.	40