COURSE TEACHING STRUCTURE
Course: Basic Electronics Engg (104010)

Class: FE

Unit 1: Introduction to Electronics (18.40 Hours & 15Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Introduction to Electronics, Evolution of Electronics.	30 min	Theoretical	5
2	Impact of Electronics on Industry and Society.	30 min	Theoretical	5
3	Introduction to Active & Passive Components	1.30 hours	Theoretical	5
4	Resistors & Capacitors	1 hour	Theoretical & Numerical	-
5	Switches & Relay	10 min	Theoretical	-
6	P- type & N- type semiconductor	30 min	Theoretical	2
7	Current in semiconductor: Drift Concept	30 min	Theoretical	4
8	Current in semiconductor: Diffusion Concept	30 min	Theoretical	4
9	P-N Junction diode construction & working	1 hour	Theoretical	5
10	V-I characteristics of PN junction diode	1 hour	Theoretical & Numerical	5
11	Diode as a switch	1 hour	Theoretical	5
12	Rectifiers: HWR & Derivation	1 hour	Theoretical & Numerical	5
13	Rectifiers: FWR & Derivation	1 hour	Theoretical & Numerical	5
14	Rectifiers: BR, Derivation & Comparison	1.30 hours	Theoretical & Numerical	5
15	Special Purpose diodes: Zener Diode	1 hour	Theoretical	5
16	Zener Diode as Shunt Regulator	1 hour	Theoretical & Numerical	5
17	Special Purpose diodes: LED Diode	1 hour	Theoretical	5

18	Special Purpose diodes: Photodiode	1 hour	Theoretical	5
19	Numerical Practice	1 hour	Theoretical	5
20	Unit Complete Revision	2 hours	Theoretical & Numerical	15
21	Unit Test I	1 hour	Theoretical & Numerical	30

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Unit 2: Transistor and OPAMP (19.35 Hours & 15 Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Prerequisite	5 min	Theoretical	-
2	Bipolar Junction Transistor : Construction, type.	2 hours	Theoretical & Numerical	5
3	BJT operation & VI characteristics region of operation,	2.30 hours	Theoretical & Numerical	5
4	BJT as switch	1 hour	Theoretical & Numerical	5
5	CE amplifier	1 hour	Theoretical & Numerical	5
6	MOSFET: Construction, Types, Operation,	2.30 hours	Theoretical & Numerical	5
7	V-I characteristics & Regions of operation	2 hours	Theoretical & Numerical	5
8	MOSFET as switch	1 hour	Theoretical & Numerical	5
9	MOSFET as amplifier.	1 hour	Theoretical & Numerical	5
10	Operational amplifier: Functional block diagram of operational amplifier,	1 hour	Theoretical & Numerical	5
11	Ideal operational amplifier	30 min	Theoretical	5
12	Op-amp as Inverting	1 hour	Theoretical & Numerical	5
13	Non inverting amplifier	1 hour	Theoretical & Numerical	5
14	Unit Complete Revision	2 hours	Theoretical & Numerical	15
15	Unit Test II	1 hour	Theoretical & Numerical	30

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Unit 3: Number System & Logic Gates (11.05 Hours & 17 Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Prerequisite	5 min	Theoretical	-
2	Number System:- Binary, BCD, Octal, Decimal, Hexadecimal	1 hour	Theoretical & Numerical	-
3	Number System:- conversion	1 hour	Theoretical & Numerical	6
4	Arithmetic, De-Morgan's theorem.	1 hour	Theoretical & Numerical	6
5	Basic Gates:- AND, OR, NOT, Universal Gate- XOR, XNOR	1 hour	Theoretical & Numerical	4
6	Half adder, Full adder	1 hour	Theoretical & Numerical	5
7	Flip Flop's SR,	1 hour	Theoretical & Numerical	5
8	JK, T and D	1hour	Theoretical & Numerical	4
9	Introduction to Microprocessor and Microcontroller	1 hour	Theoretical	4
10	Unit Complete Revision	2 hours	Theoretical & Numerical	17
11	Unit Test III	1 hour	Numerical	30

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Unit 4: Electronic Instrumentation (10.05 Hours & 8 Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Prerequisite	5 min	Theoretical	-
2	Principles and block diagram of digital multimeter,	30 min	Theoretical	6
3	Function Generator	30 min	Theoretical	6
4	Digital Storage Oscilloscope (DSO)	1 hour	Theoretical	6
5	Power scope	1 hour	Theoretical	6
6	AC/DC power supply	1 hour	Theoretical	6
7	Auto transformer	1 hour	Theoretical	6
8	Analog ammeter and voltmeter.	2 hours	Theoretical	6
12	Unit Complete Revision	2 hours	Theoretical	18
13	Unit Test	1 hour	Theoretical	30

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Unit 5: Sensors (13.5 Hours & 17 Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Prerequisite	5 min	Theoretical	-
2	Classification of a sensors	1.30 hours	Theoretical	6
3	Motion Sensors (LVDT, Accelerometer)	2 hours	Theoretical	6
4	Temperature Sensors (Thermocouple, Thermistor, RTD),	3 hours	Theoretical	5
5	Optical Sensors (LDR)	30 min	Theoretical	6
6	Mechanical Sensors (Strain Gauge, Load Cell, Pressure sensors)	2 hours	Theoretical	6
7	Biosensors. (Working Principle and one application).	1 hour	Theoretical	5
8	Unit Complete Revision	2 hours	Theoretical	17
9	Unit Test	1 hour	Theoretical	30

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Unit 6: Communication Systems (11.50 Hours & 18 Marks)

Sr. No.	TOPIC	DURATION	TOPIC BASED	MARKING SCHEME
1	Prerequisite	5 min	Theoretical	-
2	Basic Communication System: Block Diagram,	1 hour	Theoretical	6
3	Modes of Transmission	15 min	Theoretical	6
4	Communication Media: Wired and Wireless	2 hours	Theoretical	6
5	Electromagnetic Spectrum	30 min	Theoretical	6
6	Block Diagram of AM and FM Transmitter and receiver	3 hours	Theoretical	6
7	Mobile Communication System: Cellular concept,	1 hour	Theoretical	6
8	Simple block diagram of GSM system	1 hour	Theoretical	6
9	Unit Complete Revision	2 hours	Theoretical	17
10	Unit Test	1 hour	Theoretical	30