

SUBJECT: Basic Electronics Theory**CLASS XI****SEMESTER I****THEORY****FULL MARKS -20****(MCQ Type Question)**

UNIT	Topic	No of periods assigned	Marks
1	Semiconductor and Diode	30	12
2	Rectifier and Power Supply	15	8
	Total	45	20

DETAIL SYLLABUS

Unit 1	Topic / Sub Topic	No of periods assigned	Marks
1.1	Energy level diagrams of insulator, conductor & semiconductor.	3	1
1.2	Concept of Intrinsic & Extrinsic semiconductor, Idea of Doping concentration-heavy & light doping.	6	1
1.3	Formation of P-Type and N-Type semiconductor and their properties.	3	2
1.4	Formation of P-N junction Diode -space charge region- potential barrier.	6	2
1.5	P-N junction Diode under forward bias & reverse bias condition with V-I characteristics curve.	6	3
1.6	Special Types of Diodes- Zener diode, Varactor diode & LED.	6	3
Unit 2	Topic / Sub Topic	No of periods assigned	Marks
2.1	Half Wave and Full Wave Rectifiers (Bridge & Centre Tap): Average voltage, R.M.S. voltage, Efficiency and Ripple factor, Percentage voltage regulation, TUF, Peak reverse voltage.	6	3
2.2	Necessity of Filter circuit. Types of Filter circuit – Capacitor input Filter Periods– Inductive filter –Inductive filter – Π type filter and Function of bleeder resistor.	6	3

2.3	Different IC voltage Regulators: Positive & Negative & their specifications.	3	2
	Total	45	

SUBJECT: Basic Electronics Theory**CLASS XI****SEMESTER II****THEORY****FULL MARKS – 30****(SAQ AND LAQ Type Question)**

UNIT	Topic	No of periods assigned	Marks
3	Bipolar Transistor	24	10
4	FET	12	8
5	OPAMP	27	12
	Total	63	30

DETAIL SYLLABUS

Unit 3	Topic / Sub Topic	No of periods assigned
3.1	Construction and working principle of PNP and NPN Transistor.	6
3.2	Identification of different transistor terminal currents and definition of α , β , and γ factors along with their comparison.	3
3.3	Different Transistor configurations like CB, CE & CC, input and output characteristics, Comparison of CB, CE and CC configurations.	6
3.4	Concept of Q-point, dc load lines. Biasing of a Transistor, different types of biasing, Use of Transistor as an Amplifier.	9
Unit 4	Topic / Sub Topic	No of periods assigned
4.1	Construction of N- Channel & P-Channel FET and their symbol.	3
4.2	Working principle of FET & understanding of V-I Characteristic Curve.	6
4.3	Difference between BJT and FET, Basic concept of CMOS	3
Unit 5	Topic / Sub Topic	No of periods assigned
5.1	Features of an ideal OPAMP, Pin configuration of 741, Concept of Virtual Ground & Offset null adjustment.	6
5.2	Inverting and non-inverting mode and their gain calculation.	6
5.3	Common mode rejection ratio, Bias current, Offset voltage and current, Slew rate, Open loop and closed loop gain, Input and output impedance	6
5.4	Applications of OPAMP: Adder, Differential Amplifier, Subtractor,	9

	Voltage Follower, Integrator, & Differentiator circuit.	
	Total	63