

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

UNIT	Topic	No of periods assigned	Marks
1	Basic concept of – Force, Work, Energy, Power	03	1
2	Basic concept of – Conductor, Semiconductor, Insulator	06	3
3	Concept of Electrical Energy	04	1
4	Current Electricity	04	1
5	Concept of electrical circuit	07	4
6	Laws of circuit	04	2
7	Passive circuit element	08	4
8	AC Fundamental	09	4
	Total	45	20

DETAIL SYLLABUS

Unit	Topic / Sub Topic	No of periods assigned
1.	Basic concept of – Force, Work, Energy, Power – Their definition, S.I. Unit and respective mathematical relationship.	03
2.	Basic concept of – Conductor, Semiconductor, Insulator- their differences. Charge, Potential, Current, Potential difference, Electrical power, Electrical energy - Their definition, S.I. Unit and respective mathematical relationship.	06
3.	Concept of Electrical Energy – Difference between Current electricity and Static electricity. Concept of D.C. and A.C. power supply and such sources.	04
4.	Current Electricity: Ohm's Law, concept of Resistance, Resistivity, Temperature coefficient. Simple problems on Ohm's Law.	04
5.	Concept of electrical circuit: Series resistive circuit, Parallel resistive circuit, their Equivalent resistance. Star to delta and Delta to star transformation. (only formula, no deduction)	07
6.	Laws of circuit: Kirchoff's Voltage & Current Law. Simple problems.	04
7.	Basic concept of Inductance, Capacitance – Their definition, Unit of measurement, role of capacitance and inductance as stored energy in electrical circuit, Expression of stored energy. (No deduction) Definition & expression of Reactance for	08

	inductance and capacitance.	
8.	AC Fundamental: Concept of Sinusoidal Voltage & Current – Time period, Frequency, Definition of Peak value, Root mean square (R.M.S) value, Average value, Form factor. (No deduction). Simple problems.	09
	Total	45

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

UNIT	Topic	No of periods assigned	Marks
9	Single and Three Phase System	04	2
10	Domestic wiring system	15	6
11	Basic Measurement System	09	4
12	Energy Sources	11	6
13	Study of Power Flow	06	2
14	Earthing	09	5
15	Electrical Safety	09	5
	Total	63	30

DETAIL SYLLABUS

Unit	Topic / Sub Topic	No of periods assigned
9.	Basic knowledge of Single-phase system and Three phase system.	04
10.	<u>Domestic wiring system</u> Types of Domestic wiring system, Schematic diagram of Domestic wiring system (commencing from Energy meter). Accessories used for wiring- Main switch, Distribution board, Fuse, MCB, RCCB; Cable, Conduit, Casing, Inspection box, One way Switch, Two way switch, Switch board, Plug Socket (only specification and use).	15
11.	<u>Basic Measurement System</u> : Basic concept of connections of D.C. and A.C. Ammeter, Voltmeter. Simple connection diagram to measure Current, Voltage of a single phase A.C. circuit.	09
12	<u>Energy Sources</u> : Concept (Block Diagram only) of different forms of Energy sources- (a) Conventional – Thermal power, Hydel power, Nuclear power. (b) Renewable – Solar power, Wind power.	11
13.	<u>Study of Power Flow</u> : Study with block diagram power flow from generating station to consumer.	06
14.	<u>Earthing</u> : Concept of Earthing, requirement of earthing, types of earthing system – rod, pipe and plate earthing.	09
15.	<u>Electrical Safety</u> : Dos & don'ts for electrical work, causes of electrical accidents, Procedure for rescuing the person who has received an electric shock, methods of	09

	providing artificial respiration. Types of fire extinguishers to be used for electrical fire. Concept of hazardous zone. class 0,1 and 2	
	Total	63