

ELECTRICITY AND ELECTRONICS (866)

BIFURCATED SYLLABUS

(As per the Reduced Syllabus for ISC - Class XII Year 2022 Examination)

SEMESTER 1 (Marks: 40)		SEMESTER 2 (Marks: 40)	
UNIT NO.	NAME OF THE UNIT	UNIT NO.	NAME OF THE UNIT
1.	Distribution of electric power. Idea of a simple distribution system. Mention of the local power system should be made.	6.	Power supply for electronic apparatus. Mains transformer. The diode; half wave, full wave and bridge rectifiers, voltage doubler. Filters; RC filters, chokes, bleeder resistance and its functions.
2.	The D.C. generator and motor. Use of split-ring commutators; constructional features. Shunt series and compound field connections and their characteristics. Starting of D.C. motors. Ideas on back e.m.f.	7.	Vacuum triode. Structure of the vacuum triode valve. The control grid. Triode valve characteristics. Triode parameters; anode resistance, mutual conductance and amplification factors; relationship between the above parameters. Triode as a voltage amplifier. Bias voltage, cathode resistor and cathode bypass capacitor.
3.	The A.C. motor. Ideas on A.C. motors (single phase only). The rotating field. Methods of shunting: capacitance start, split phase start. Single-phase induction motor types.	8.	Semiconductor Transistors. The junction transistor: PNP and NPN types. Introduction to various methods of construction; their characteristics including handling procedures and precautions.
4.	Introduction to electronics. Concept of electron flow. Common components employed in electronic circuits; resistors, capacitors and inductors; their structure, types and uses.	9.	Transistor amplifier. Introduction to the common-base, common emitter and common collector amplifiers. Comparison of the voltage, current and power gains and input and output resistances (elementary approach only). Phase relationship. Bias stabilization.
5.	Diodes. Thermionic diode; semiconductor diode. Structure of vacuum diode and semiconductor diode.	10.	The amplifier. A typical amplifier voltage and power amplification. Matching of the power output stage to a speaker.

		11.	<p>Apparatus for reproducing and recording sounds. Range of hearing, recording and reproducing.</p> <p>Characteristics of microphones; types of microphones: carbon, crystal, moving-coil and ribbon types. The earphone; moving-coil loudspeakers; permanent magnet. Electrostatic speaker.</p>
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