TELANGANA STATE BOARD OF INTERMEDIATE EDUCATION, HYDERABAD

ACADEMIC YEAR 2020-2021

70% CONTENT IN VIEW OF COVID-19 PANDEMIC

INTERMEDIATE 2nd YEAR PHYSICS SYLLABUS

CHAPTER – 1: WAVES

1.1 Introduction
1.2 Transverse and Longitudinal waves
1.3 Displacement relation in a progressive wave
1.4 Speed of a Travelling Wave
1.5 The principle of superposition of waves,
1.6 Reflection of waves
1.7 Beats

CHAPTER– 2: RAY OPTICS AND OPTICAL INSTRUMENTS

2.1 Introduction
2.3 Refraction
2.4 Total Internal Reflection
2.5 Refraction at Spherical Surfaces and by Lenses.
2.6 Refraction through a prism
2.7 Dispersion by a Prism
2.8 Some Natural phenomena due to Sunlight (except 2.8.2)
2.8.1 The Rainbow
2.9 Optical Instruments

CHAPTER – 3: WAVE OPTICS

3.1 Introduction
3.2 Huygens Principle
3.3 Refraction and Reflection of plane waves using Huygens Principle
3.4 Coherent and Incoherent Addition of waves
3.5 Interference of Light waves and Young's Experiment
3.6 Diffraction (except 3.6.3)
3.6.1 The single slit
3.6.2 Seeing the single slit diffraction pattern
3.6.4 The validity of ray optics

CHAPTER – 4: ELECTRIC CHARGES AND FIELDS

4.1 Introduction
4.2 Electric Charges
4.3 Conductors and Insulators
4.4 Charging by Induction
4.5 Basic Properties of Electric Charge
4.6 Coulomb's Law
4.7 Forces between Multiple charges
4.8 Electric Field
4.9 Electric Field Lines
4.10 Electric Flux
4.11 Electric Dipole
4.12 Dipole in a uniform external field
4.13 Continuous Charge Distribution
4.14 Gauss's Law
4.15 Application of Gauss' Law (except 4.15.3)
4.15.1 Field due to an infinitely long straight uniformly charged wire
4.15.2 Field due to a uniformly charged infinite plane sheet

CHAPTER–5: ELECTROSTATIC POTENTIAL AND CAPACITANCE

5.1 Introduction
5.2 Electrostatic Potential
5.3 Potential due to a point charge
5.4 Potential due to an Electric Dipole
5.5 Potential due to a System of Charges
5.6 Equipotential Surfaces
5.7 Potential Energy of a System of Charges
5.8 Potential Energy in an External field
5.9 Electrostatics of Conductors
5.10 Dielectrics and Polarisation
5.11 Capacitors and Capacitance
5.12 The Parallel Plate Capacitor
5.13 Effect of Dielectric on Capacitance
5.14 Combination of Capacitors
5.15 Energy Stored in a Capacitor

CHAPTER – 6: CURRENT ELECTRICITY

6.1 Introduction
6.2 Electric current
6.3 Electric current in conductors
6.4 Ohm's Law

6.5 Drift Electrons and Origin of Resistivity
6.6 Limitations of Ohms's Law
6.8 Temperature Dependence of Resistivity
6.9 Electric Energy, Power
6.11 Cells, emf, Internal Resistance
6.12 Cells in Series and in Parallel
6.13 Kirchoff's Laws
6.14 Wheatstone Bridge (**Qualitative treatment only)**
6.15 Meter Bridge
6.16 Potentiometer

CHAPTER – 7: MOVING CHARGES AND MAGNETISM

7.1 Introduction
7.2 Magnetic Force
7.3 Motion in a Magnetic field
7.5 Magnetic Field due to a Current Element, Biot-Savart Law
7.6 Magnetic Field on the Axis of a Circular Current Loop
7.7 Ampere's Circuital Law
7.8 The Solenoid and the Toroid
7.9 Force between two Parallel Currents, The Ampere(Unit)
7.10 Torque on Current Loop, Magnetic Dipole
7.11 The Moving Coil Galvanometer

CHAPTER – 8: MAGNETISM AND MATTER

8.1 Introduction
8.2 The Bar Magnet (**except 8.2.2, 8.2.3**)
8.2.1 The magnetic field lines
8.2.4 The electrostatic analog
8.3 Magnetism and Gauss' Law
8.4 The Earth's Magnetism
8.5 Magnetisation and Magnetic Intensity

CHAPTER – 9: ELECTROMAGNETIC INDUCTION

9.1 Introduction
9.2 The experiments of Faraday and Henry
9.3 Magnetic Flux
9.4 Faraday's Law of Induction
9.5 Lenz's Law and Conservation of Energy
9.6 Motional Electromotive Force
9.7 Energy consideration : A Quantitative Study

9.8 Eddy Currents
9.9 Inductance
9.10 AC Generator

CHAPTER – 10: ALTERNATING CURRENT :

10.1 Introduction
10.2 AC voltage applied to a Resistor
10.3 Representation of AC Current and Voltage by Rotating Vectors- Phasors
10.4 AC voltage applied to an Inductor
10.5 AC voltage applied to a Capacitor
10.6 AC voltage applied to a Series LCR Circuit
10.8 LC Oscillations (**Qualitative treatment only**)
10.9 Transformers

CHAPTER – 11: ELECTRO MAGNETIC WAVES

11.1 Introduction
11.3 Electro Magnetic Waves (**qualitative treatment only**)
11.4 Electromagnetic Spectrum

CHAPTER–12: DUAL NATURE OF RADIATION AND MATTER

12.1 Introduction
12.2 Electron Emission
12.3 Photoelectric Effect
12.4 Experimental Study of Photoelectric Effect
12.5 Photoelectric Effect and Wave Theory of Light
12.6 Einstein's Photoelectric Equation: Energy Quantum of Radiation
12.7 Particle Nature of Light : The Photon
12.8 Wave Nature of Matter

CHAPTER–13: ATOMS

13.1 Introduction
13.2 Alpha-particle Scattering and Rutherford's Nuclear model of Atom
13.3 Atomic Spectra
13.4 Bohr Model of the Hydrogen Atom
13.5 The Line Spectra of the Hydrogen Atom
13.6 De Broglie's Explanation of Bohr's Second Postulate of Quantization

CHAPTER–14: NUCLEI

14.1 Introduction
14.2 Atomic Masses and Composition of Nucleus
14.3 Size of the Nucleus
14.4 Mass Energy and Nuclear Binding Energy (except 14.4.2)
14.4.1 Mass- Energy
14.5 Nuclear Force
14.7 Nuclear energy

CHAPTER–15:
SEMICONDUCTOR ELECTRONICS: MATERIALS, DEVICES AND SIMPLE CIRCUITS

15.1 Introduction
15.2 Classification of Metals, Conductors and Semiconductors (**qualitative ideas only**)
15.3 Intrinsic Semiconductor
15.4 Extrinsic Semiconductor
15.5 p – n junction
15.6 Semi conductor diode
15.7 Application of Junction Diode as a Rectifier
15.8 Special Purpose p-n Junction Diodes (except 15.8.1)
15.8.2 Optoelectronic junction devices
15.9 Junction Transistor (except 15.9.3, 15.9.4, 15.9.5)
15.9.1 Transistor structure and action
15.9.2 Basic transistor circuit configuration and transistor characteristics
15.10 Digital Electronics and Logic Gates
15.11 Integrated Circuits

CHAPTER– 16: COMMUNICATION SYSTEMS

16.1 Introduction
16.2 Elements of communication system
16.3 Basic Terminology used in Electronic Communication Systems
16.4 Bandwidth of Signals
16.5 Bandwidth of Transmission Medium
16.6 Propagation of Electromagnetic Waves
16.7 Modulation and its Necessity
16.8 Amplitude Modulation
16.9 Production of Amplitude Modulated Wave
16.10 Detection of Amplitude Modulated Wave