B

ನಮೂನೆ – 2
(ಪ್ರಯೋಗ ಸಹಿತ ವಿಷಯಗಳು)
(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನ ಶಾಸ್ತ್ರ, ಜೀವಶಾಸ್ತ್ರ, ಗಣಕ ವಿಜ್ಞಾನ, ವಿದ್ಯುನ್ಮಾನ ಶಾಸ್ತ್ರ, ಗೃಹ ವಿಜ್ಞಾನ) 70+30

ವಿಷಯ: ಭೌತಶಾಸ್ತ್ರ **ಸಂಕೇತ: 33** **ತರಗತಿ: ದ್ವಿತೀಯ ಪಿಯುಸಿ**

ಕ್ರ. ಸಂ.	ಅವಧಿ	ನಿಗದಿಪಡಿಸಿದ ಅಧ್ಯಾಯಗಳು	ನಿಗದಿಪಡಿಸಿದ ಪ್ರಾಯೋಗಿಕ ತರಗತಿಗಳು	ಅವಧಿಗಳು
1	**ಮೊದಲ ಅವಧಿ 15-07-2021 ರಿಂದ 15-09-2021 ವರೆಗೆ**	**1. Electric Charges and Fields** 1.1 Introduction 1.2 Electric Charge 1.3 Conductors and Insulators 1.4 Charging by Induction 1.5 Basic Properties of Electric Charge 1.6 Coulomb's Law 1.7 Forces between Multiple Charges 1.8 Electric Field 1.9 Electric Field Lines 1.10 Electric Flux 1.11 Electric Dipole 1.12 Dipole in a Uniform External Field 1.13 Continuous Charge Distribution 1.14 Gauss's Law 1.15 Applications of Gauss's Law 1.15.1 Field due to infinitely long straight uniformly charged wire. 1.15.2 Field due to uniformly charged infinite plane sheet. **2. Electric Potential and Capacitance** 2.1 Introduction 2.2 Electrostatic Potential 2.3 Potential due to a Point Charge 2.4 Potential due to an Electric Dipole 2.5 Potential due to a System of Charges 2.6 Equipotential Surfaces 2.7 Potential Energy of a System of Charges 2.8 Potential Energy in an External Field 2.9 Electrostatics of Conductors 2.10 Dielectrics and Polarisation 2.11 Capacitors and Capacitance 2.12 The Parallel Plate Capacitor 2.13 Effect of Dielectric on Capacitance	1. Resistance per unit length of a wire 2. Resistivity of a wire using a meter bridge 3. Comparison of EMF's of two cells 4. Internal resistance of a cell	**35**

		2.14 Combination of Capacitors 2.15 Energy Stored in a Capacitor **3. Current Electricity** 3.1 Introduction 3.2 Electric Current 3.3 Electric Currents in Conductors 3.4 Ohm's law 3.5 Drift of Electrons and the Origin of Resistivity 3.6 Limitations of Ohm's Law 3.8 Temperature Dependence of Resistivity 3.9 Electrical Energy, Power 3.11 Cells, emf, Internal Resistance 3.12 Cells in Series and in Parallel 3.13 Kirchhoff's Rules 3.14 Wheatstone Bridge 3.15 Meter Bridge 3.16 Potentiometer **4. Moving Charges and Magnetism** 4.1 Introduction 4.2 Magnetic Force 4.3 Motion in a Magnetic Field 4.4 Motion in Combined Electric and Magnetic Fields 4.4.1 Velocity Selector 4.5 Magnetic Field due to a Current Element, Biot-Savart Law 4.6 Magnetic Field on the Axis of a Circular Current Loop		
2	**1ನೇ ಕಿರು ಪರೀಕ್ಷೆ 13-09-2021 ರಿಂದ 15-09-2021 ವರೆಗೆ**	**ಮೊದಲ ಅವಧಿಯಲ್ಲಿ ಬೋಧಿಸಿದ ಪಠ್ಯವಸ್ತು (ವಾರ್ಷಿಕ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯ ಮಾದರಿಯಲ್ಲಿಯೇ ಪರೀಕ್ಷೆಗಳು ನಡೆಯುವವು)**		
3	**ಅಸೈನ್ಮೆಂಟ್ - 1**	**ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತಾರ್ಕಿಕ ಚಿಂತನೆಗೊಳಿಸುವ ವಿಷಯಗಳನ್ನು ನೀಡುವುದು**		
4	**ಎರಡನೇ ಅವಧಿ 16-09-2021 ರಿಂದ 30-11-2021 ವರೆಗೆ**	**4. Moving Charges and Magnetism** 4.7 Ampere's Circuital Law 4.8 The Solenoid and the Toroid 4.9 Force between Two Parallel Currents, the Ampere 4.10 Torque on Current Loop, Magnetic Dipole 4.11 The Moving Coil Galvanometer **5. Magnetism and Matter** 5.1 Introduction 5.2 The Bar Magnet 5.2.1 The magnetic field lines 5.3 Magnetism and Gauss's Law	5. Figure of merit of a galvanometer 6. Conversion of a galvanometer into: (A) an ammeter (B) a voltmeter 7. Frequency of AC 8. Focal length of a convex lens 9. Focal length of a concave lens	**32**

		5.4 The Earth's Magnetism 5.5 Magnetisation and magnetic intensity **5. Electromagnetic Induction** 6.1 Introduction 6.2 The Experiments of Faraday and Henry 6.3 Magnetic Flux 6.4 Faraday's Law of Induction 6.5 Lenz's Law and Conservation of Energy 6.6 Motional Electromotive Force 6.7 Energy Consideration: A Quantitative Study 6.8 Eddy Currents 6.9 Inductance 6.10 AC Generator **6. Alternating Current** 7.1 Introduction 7.2 AC Voltage Applied to a Resistor 7.3 Representation of AC Current and Voltage by Rotating Vectors — Phasors 7.4 AC Voltage Applied to an Inductor 7.5 AC Voltage Applied to a Capacitor 7.6 AC Voltage Applied to a Series LCR Circuit 7.8 LC Oscillations 7.9 Transformers **7. Electromagnetic Waves** 8.1 Introduction 8.3 Electromagnetic Waves 8.4 Electromagnetic Spectrum **8. Ray Optics and Optical Instruments** 9.1 Introduction 9.3 Refraction 9.4 Total Internal Reflection 9.5 Refraction at Spherical Surfaces and by Lenses 9.6 Refraction through a Prism 9.7 Some Natural Phenomena due to Sunlight 9.7.1 Rainbow 9.8 Optical Instruments		
5	**ಮಧ್ಯವಾರ್ಷಿಕ ಪರೀಕ್ಷೆ 20-11-2021 ರಿಂದ 30-11-2021 ವರೆಗೆ**	**1 ಮತ್ತು 2ನೇ ಅವಧಿಯಲ್ಲಿ ಬೋಧಿಸಿದ ಒಟ್ಟು ಪಠ್ಯವಸ್ತುವನ್ನು ಆಧರಿಸಿ**		
6	**ಅಸೈನ್ಮೆಂಟ್ - 2**	**ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತಾರ್ಕಿಕ ಚಿಂತನೆಗೊಳಿಸುವ ವಿಷಯಗಳನ್ನು ನೀಡುವುದು**		

		(ಎರಡನೇ ಅವಧಿಯ ಪಠ್ಯವಸ್ತುವನ್ನು ಆಧರಿಸಿ)		
7	ಮೂರನೇ ಅವಧಿ 01-12-2021 ರಿಂದ 30-01-2021 ವರೆಗೆ	**10. Wave Optics** 10.1 Introduction 10.2 Huygens Principle 10.3 Refraction and Reflection of Plane Waves using Huygens Principle 10.4 Coherent and Incoherent Addition of Waves 10.5 Interference of Light Waves and Young's Experiment 10.6 Diffraction 10.6.1 The single slit 10.6.2 Seeing the single slit diffraction pattern 10.6.4 the validity of ray optics **11. Dual Nature of Radiation and Matter** 11.1 Introduction 11.2 Electron Emission 11.3 Photoelectric Effect 11.4 Experimental Study of Photoelectric Effect 11.5 Photoelectric Effect and Wave Theory of Light 11.6 Einstein's Photoelectric Equation: Energy Quantum of Radiation 11.7 Particle Nature of Light: The Photon 11.8 Wave Nature of Matter **12. Atoms** 12.1 Introduction 12.2 Alpha-particle Scattering and Rutherford's Nuclear Model of Atom 12.3 Atomic Spectra 12.4 Bohr Model of the Hydrogen Atom 12.5 The Line Spectra of the Hydrogen Atom 12.6 de Broglie's Explanation of Bohr's Second Postulate of Quantisation **13. Nuclei** 13.1 Introduction 13.2 Atomic Masses and Composition of Nucleus 13.3 Size of the Nucleus 13.4 Mass-Energy and Nuclear Binding Energy ((except binding energy per nucleon and its variation with mass number) 13.5 Nuclear Force 13.7 Nuclear Energy	10. Angle of minimum deviation of a prism 11. Refractive index of a glass slab 12. Refractive index of a liquid (water) 13. Semiconductor diode characteristics	**32**

		14. Semiconductor Electronics: Materials, Devices and Simple Circuits 14.1 Introduction 14.2 Classification of Metals, Conductors and Semiconductors 14.3 Intrinsic Semiconductor 14.4 Extrinsic Semiconductor 14.5 p-n Junction 14.6 Semiconductor Diode 14.7 Application of Junction Diode as a Rectifier 14.8 Special Purpose p-n Junction Diodes 14.8.2 OPTOELECTRONIC JUNCTION DEVICES 14.9 Digital Electronics and Logic Gates		
8	**2ನೇ ಕಿರು ಪರೀಕ್ಷೆ 28-01-2022 ರಿಂದ 31-01-2022 ವರೆಗೆ**	**ಮೂರನೇ ಅವಧಿಯಲ್ಲಿ ಬೋಧಿಸಿದ ಪಠ್ಯವಸ್ತು**		
9	**ನಾಲ್ಕನೇ ಅವಧಿ 01-02-2022 ರಿಂದ 31-03-2022 ವರೆಗೆ**	**1. Electric Charges and Fields** 1.15.3 Uniformly charged thin spherical shell (field inside and outside). **3. Current Electricity** Carbon resistors, colour code for carbon resistors; 3.10 Combination of Resistors — Series and Parallel **4. Moving Charges and Magnetism** 4.4.2 Cyclotron **5. Magnetism and Matter** 5.2.2 Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. 5.2.3 Torque on a magnetic dipole (bar magnet) in a uniform magnetic field 5.6 Para-, dia- and ferro - magnetic substances, with examples. 5.7 Electromagnets and factors affecting their strengths, permanent magnets. **7. Alternating Current** 7.7 Power factor, wattless current **8.** Electromagnetic Waves 8.2 Basic idea of displacement current **9. Ray Optics and Optical Instruments** 9.2 Reflection of light, spherical mirrors, (recapitulation) mirror formula 9.7.2 Scattering of light - blue colour of sky and reddish appearance of the sun at sunrise and sunset	14. Verification of laws of combination of resistances using a meter-bridge 15. Focal length of a concave mirror 16. Focal length of a convex mirror 17. Zener diode characteristics	**32**

		10. Wave Optics 10.6.3 Resolving power of microscope and astronomical telescope 10.7 Polarisation, plane polarised light, Brewster's law, uses of plane polarised light and Polaroids. **11. Dual Nature of Radiation and Matter** 11.9 Davisson-Germer experiment 13. **Nuclei** 13.6 Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law, half-life and mean life. Binding energy per nucleon and its variation with mass number 14. **Semiconductor Electronics: Materials, Devices and Simple Circuits** 14.8.1 Zener diode and their characteristics, Zener diode as a voltage regulator		
10	**ಪೂರ್ವಸಿದ್ಧತಾ ಪರೀಕ್ಷೆ 24-03-2022 ರಿಂದ 30-03-2022**	**ಪೂರ್ಣ ಪ್ರಮಾಣದ ಪಠ್ಯವಸ್ತು**		
11	**ವಾರ್ಷಿಕ ಪರೀಕ್ಷೆ ಏಪ್ರಿಲ್ ಮೊದಲ ವಾರ**	**ಪೂರ್ಣ ಪ್ರಮಾಣದ ಪಠ್ಯವಸ್ತು**		

<u>ಸೂಚನೆ:</u> ಪ್ರಾಯೋಗಿಕ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ವಿನ್ಯಾಸದ ಅನುಗುಣ ಕನಿಷ್ಠ 14 ಪ್ರಯೋಗಗಳನ್ನು ಬೋಧಿಸುವುದು ಮತ್ತು ರೆಕಾರ್ಡ್ ಬರೆಸುವುದು (ಭೌತಿಕ ತರಗತಿಗಳು ಆರಂಭವಾದ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳು ಪ್ರಯೋಗಗಳನ್ನು ಮಾಡಿ ರೆಕಾರ್ಡ್ ನಲ್ಲಿ observation ಮತ್ತು calculation column ಗಳನ್ನು ತುಂಬುವುದು).