



साप्ताहिक विच्छेदित पाठ्यक्रम

मई 2024-मार्च 2025

कक्षा-12

विज्ञान संकाय

एकीकृत
शैक्षणिक कैलेंडर
2024 के साथ
समन्वित



सम्बंधित दस्तावेज एवं शैक्षणिक सामग्री
के लिए QR कोड को SCAN करें।



झारखण्ड शैक्षिक अनुसंधान एवं प्रशिक्षण परिषद्, राँची
Jharkhand Council of Educational Research and Training, Ranchi

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PHYSICS

*** It is mandatory to conduct practical classes of related lessons simultaneously as per the syllabus.**

Month	Week	Name of Chapter	TOPICS
May (17 days) & June (16 days)	May 1st, 2nd, 3rd, 4th & 5th (17 days)	1. Electric charge and field	Electric charges and their conservation. Coulomb's law – force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in a uniform electric field Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside). PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS.
June	June 1st, 2nd & 3rd (6 days)	2. Electric potential and capacitance	Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipoles in an electrostatic field. PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	June 4th & 5th (10 days)	2. Electric potential and capacitance	capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor, PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
July (25 days)	1st (6 days)	03.CURRENT ELECTRICITY	Electric current, flow of electric charges in a metallic conductor
	2nd (6 days)	03.CURRENT ELECTRICITY	Drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS temperature dependence of resistance.
	3rd (4 days)	03.CURRENT ELECTRICITY	Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. PRACTICE SESSION / Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS Kirchhoff's laws and simple applications. Wheatstone bridge.
	4th (6 days)	4. Magnetic effect of current	Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop Ampere's law and its applications to infinitely long straight wire, straight solenoids. Force on a moving charge in uniform magnetic and electric fields.
	5th (3 days)	4. Magnetic effect of current	Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors – definition of ampere.

PHYSICS

Month	Week	Name of Chapter	TOPICS
August (24 days)	1st (3 days)	4. Magnetic effect of current	Torque experienced by a current loop in a magnetic field; moving coil galvanometer – its current sensitivity and conversion to ammeter and voltmeter. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	2nd (6 days)	4. Magnetic effect of current	PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	3rd (5 days)	5. Magnetism and matter	Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; and magnetic elements. Para-, dia- and ferro - magnetic substances, with examples. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	4th (5 days)	6. Electromagnetic induction	Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law,
	5th (5 days)	6. Electromagnetic induction	. Self and mutual inductance. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
September (20 days)	1st (0 days) 2nd (5 days)	7. Alternating currents	Alternating currents, peak and rms value of alternating current /voltage; reactance and impedance;
	3rd (5 days)	7. Alternating currents	LCR series circuit, resonance; power in AC circuits, wattless current. AC generator and transformer. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
September (20 days)	4th (3 days)	8. Electromagnetic waves	Basic idea of displacement current, Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	5th (6 days)	9. Ray optics and Optical instruments	Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, Lens Makers Formulae Magnification, power of a lens, combination of thin lenses in contact.
	6th (1 days)	9. Ray optics and Optical instruments	Refraction of light through a prism. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
October (21 days)	1st (3 days)	9. Ray optics and Optical instruments	Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	2nd (3 days)	10. Wave optics	Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts. Proof of laws of reflection and refraction using Huygens' principle. Interference,
	3rd (6 days)	10. Wave optics	Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	4th (6 days)	10. Wave optics	Diffraction due to a single slit, width of central maximum. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	5th (3 days)	11. Dual Nature of Matter and Radiation	Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations

PHYSICS

Month	Week	Name of Chapter	TOPICS
November (21 days)	1st (1 Days) 2nd (4 days)	11. Dual Nature of Matter and Radiation	Einstein's photoelectric equation – particle nature of light. Matter waves – wave nature of particles, de Broglie relation. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	3rd (5 days)	12. Atoms	.Alpha – particle scattering experiment; Rutherford's model of atom Bohr model of hydrogen atom, expression for radius , velocity & energy of electron in nth orbit, energy levels,hydrogen line spectra.
	4th (6 days)		Composition and size of nucleus, Mass-energy relation, mass defect;
	5th (5 days)	13. Nuclei	binding energy per nucleon and its variation with mass number; nuclear fission and fusion. PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
December (19 days)	1st (0 days) 2nd (6 days)	14. semiconductor	Energy bands in conductors, semiconductors and insulators (qualitative ideas only)
	3rd (6 days)	14. semiconductor	intrinsic and extrinsic Semiconductors p and n type,p-n junction ; semiconductor diode – I-V characteristics in forward and reverse bias, diode as a rectifier; PRACTICE SESSION /Q A SESSION/ NUMERICALS OF ABOVE TAUGHT TOPICS
	4th (5 days) 5th (2 days) 6th (0 days)		Revision & Test
	January (20 days) February (20 days) March (21 days) till board examination		Revision & Test
Total Working Days - 224 Days (Tentative)			