



IAS PRELIM MOCK TESTS PROGRAMME (IPMTP)

- THE TEAM **VISION IAS**

Features:

- Special design Mock Tests with consideration of negative Marking pattern and actual requirement of UPSC
- Explanatory notes for Mock Tests Questions with proper source and reference
- Effective Online Support (Email & Chat) for removing all types of doubts and answering for specific questions
- Talking to our Experts for continuous guidance, feedback and support

WHY Mock Tests? – These special design Test Series serve the following ends:

- Understanding your current state preparedness and required action plans
- Judging yourself vis-a-vis the competition and corrective measure
- Development of a proper understanding of nature of questions against negative marking pattern
- Exposure to near actual competitive examination & Examination skills development
- Framing your mind towards actual pattern, toughness, Negative marking pattern and timing of the actual entrance examination.

Fees: Rs 3500

PHYSICS PRELIM : 2008

CONTENT

Test NO.	Test Code	Sections Covered	Topics covered
1.	IPMTP/PHY/T-1	A: Mechanics and Waves	<p>Dimensional analysis. Newton's laws of motion and applications, variable mass systems, projectiles. Rotational dynamics-kinetic energy, angular momentum, theorems of moment of inertia and calculations in simple cases. Conservative forces, frictional forces. Gravitational potential and intensity due to spherical objects. Central forces, Kepler's problem, escape velocity and artificial satellites (including GPS). Streamline motion, viscosity, Poiseuille's equation. Applications of Bernoulli's equation and Stokes' law.</p> <p>Special relativity and Lorentz transformation-length contraction, time dilation, mass-energy relation.</p> <p>Simple harmonic motion, Lissajous figures. Damped oscillation, forced oscillation and resonance. Beats, Phase and group velocities. Stationary waves, vibration of strings and air columns, longitudinal waves in solids. Doppler effect. Ultrasonic and applications.</p>
2.	IPMTP/PHY/T-2	B: Geometrical and Physical Optics	<p>Laws of reflection and refraction from Fermat's principle. Matrix method in paraxial optics- thin lens formula, nodal planes, system of two thin lenses. Chromatic and spherical aberrations. Simple optical instruments- magnifier, eyepieces, telescopes and microscopes.</p>

			<p>Huygens' principle-reflection and refraction of waves. Interference of light-Young's experiment, Newton's rings, interference by thin films, Michelson interferometer. Fraunhofer diffraction-single slit, double slit, diffraction grating, resolving power. Fresnel diffraction-half-period zones and zone plate. Production and detection of linearly, circularly and elliptically polarised light. Double refraction, quarter-waves plates and half-wave plates. Polarizing sheets. Optical activity and applications. Rayleigh scattering and applications.</p> <p>Elements of fiber optics-attenuation; pulse dispersion in step index and parabolic index fibred; material dispersion. Lasers, characteristics of laser light-spatial and temporal coherence. Focusing of laser beams and applications.</p>
3.	IPMTP/PHY/T-3	C: Heat and Thermodynamics	<p>Thermal equilibrium and temperature. The zeroth law of thermodynamics. Heat and the first law of thermodynamics. Efficiency of Carnot engines. Entropy and the second law of thermodynamics. Kinetic theory and the equation of state of an ideal gas. Mean free path, distribution of molecular speeds and energies. Transport phenomena. Andrew's experiments-van der Waals equation and applications. Joule-Kelvin effect and applications. Brownian motion. Thermodynamic potentials-Maxwell relations. Phase transitions. Kirchhoff's laws. Black-body radiation-Stefan-Boltzmann law, spectral radiancy, Wien displacement law, application to the cosmic microwave background radiation, Planck radiation law.</p>
4.	IPMTP/PHY/T-4	D: Electricity and Magnetism	<p>Electric charge, Coulomb's law, electric field, Gauss' law. Electric potential, van de Graff accelerator. Capacitors, dielectrics and polarization. Ohm's law, Kirchhoff's first and second rules, resistors in series and parallel, applications to two-loop circuits. Magnetic field-Gauss'law for magnetism, atomic and nuclear magnetism, magnetic susceptibility, classification of magnetic materials. Circulating charges, cyclotron, synchrotron. Hall effect. Biot-Savart law, Ampere's law, Faraday's law of induction., Lenz's law. Inductance. Alternating current circuits-RC, LR, single-loop LRC circuits, impedance, resonance, power in AC circuits. Displacement current, Maxwell's equations (MKS units), electromagnetic waves, energy transport and Poynting vector.</p>
5.	IPMTP/PHY/T-5	E: Atomic and Nuclear Physics	<p>Photoelectric effect, Einstein's photon theory. Bohr's theory of hydrogen atom. Stern-Gerlach experiment, quantization of angular momentum, electron spin. Pauli exclusion principle and applications. Zeeman effect. X-ray spectrum, Bragg's law, Bohr's theory of the Mosley plot. Compton effect, Compton wavelength. Wave</p>

			nature of matter, de Broglie wavelength, wave-particle duality. Heisenberg's uncertainty relationships. Schroedinger's equation-eigenvalues and eigenfunctions of (i) particle in a box, (ii) simple harmonic oscillator and (iii) hydrogen atom. Potential step and barrier penetration. Natural and artificial radioactivity. Binding energy of nuclei, nuclear fission and fusion. Classification of elementary particles and their interactions.
6	IPMTP/PHY/T-6	F : Electronics	Diodes in half-waves and full-wave rectification, qualitative ideas of semiconductors, p type and n type semiconductors, junction diode, Zener diode, transistors, binary numbers, Logic gates and truth tables, Elements of microprocessors and computers.
7.	IPMTP/PHY/T-7	COMPLETE TEST- I	ALL SECTIONS Mechanics and Waves + Geometrical and Physical Optics + Heat and Thermodynamics + Electricity and Magnetism + Atomic and Nuclear Physics + Electronics
8	IPMTP/PHY/T- 8	COMPLETE TEST- II	ALL SECTIONS
9	IPMTP/PHY/T- 9	COMPLETE TEST- III	ALL SECTIONS
10	IPMTP/PHY/T-10	COMPLETE TEST- IV	ALL SECTIONS

NOTE:

1. For any change of the schedule & information, Please visit Vision IAS website: www.visionias.cfsites.org
2. For in-depth Micro and Macro analysis of any topics & Sections , Question pattern & Trend Analysis on the basis statistics as well as expert Guidance & experience, Please contact at : ajay_uor@yahoo.com

REGISTRATION OPEN

DATES OF IAS (P) MOCK TESTS: PHYSICS – 2008

DAY: SUNDAY

February 2008		10	17	24		
March 2008	2	9	16	23	30	
April 2008	6	12	20	27		
May 2008	REVISION		REVISION		REVISION	

Dispatch Mode: Printed Question Papers through **Airmail or Speed** post and PDF format Question Papers through email. From the date of joining of **IPMTP**, the schedule of 15 Mock Tests will be fixed in these **Dates** which is mentioned in the above table.

CURRENT AFFAIR NOTES (For Members of IAS Prelim Mock Tests Programme)

Dispatch Time: Third week of April 2008

Source: *The Hindu, The Economic Times, Frontline, Yojana, Economic Survey-2008, Indian Year Book-2008*