



**CHEM  
ACADEMY**

**ALL INDIA ONLINE TEST SERIES**  
**IIT JAM PHYSICS 2020**  
**STARTING – Oct 2019**

**28 TESTS: 08 Unitwise Practice Test + 8 Minor Test + 6 Major Test + 3 Part Test**  
**+ 3 Full Length Tests**

**Value Addition Material + Supplementary Material: Soft copy & Hard copy**  
**(Expert Support: Telephonic Discussion/ Email Interaction)**

**Program Objective:** This is a comprehensive and intensive 'interactive' program focussing on sincere IIT JAM Aspirants who will appear in IIT JAM 2020. Our experts provide steps by step guidance to aspirants for understanding the concepts chemistry and preparing them for scoring good marks.

**Approach & Strategy:** Our Simple, practical and focussed approach will help aspirants understand the demand of IIT JAM Exam effectively. Our strategy is to constantly innovate to keep the preparation process dynamic and give personalized attention to individual aspirants based on factor core competence, availability of time and resource and the requirement of IIT JAM Exam.

**Our interactive Learning approach (Email/Telephonic Discussion: Expert with Aspirants) will continuously improve aspirant's performance and move their preparation in the right direction.**

**Number of Mock Test: 28 TESTS: 08 Unitwise + 8 Minor + 6 Major + 3 Part + 3 Full Length**

**Fee (Incl. all taxes): Rs 1500/-**

**Nature Flexible-** Date of Mock Test: Reschedule on the demand of aspirants.  
**(POSTPONE, BUT NOT PREPONE)**

**What you will get:**

- Login ID Password for performance analysis of aspirants. (Innovative Assessment System including POST TEST ANALYSIS)
- 28 Mock Test Papers & detailed conceptual Answer Explanations.
- Analysis of Mock Test papers based on difficulty level & nature of questions.
- Comprehensive analysis of previous year questions papers.

## **INNOVATIVE ASSESSMENT SYSTEM:**

Static & dynamic Potential of Mock test papers (Scoring Potential). Macro & Micro performance Analysis of aspirants, Section wise analysis, Difficulty Analysis, All India Rank, comparison with toppers, Geographical Analysis, Integrated Score Card, Analysis of Mock Test paper based on difficulty level & nature of question etc.

**HOW IT WORKS:** The tests are planned at Five different levels of preparation required for a student to succeed in IIT JAM.

**1. Unit level- Test 1 to 8:** Each test will be based entirely on the most unit sources of that particular section. Here we will test whether you have thoroughly prepared these unit sources or not and if you have understood all the basic concepts or not. These tests will be available on Chem Academy Portal right from your date of enrolment, you can give these test anytime as per your convenience. These papers are developed in order to boost your foundation and effective preparation of every particular unit mentioned in IIT JAM Syllabus. These are one and half hour tests each containing 30 questions based on IIT JAM Syllabus and Pattern.

**2. Applied level (Minor, Major) – Test 9 to 16 & 17 to 22:** In this level, we will test your subject knowledge at an applied level. Test would be more analytical in nature, application oriented with relevance to recent concepts. These tests would not be restricted to few particular sources and it would cover the entire standard books and other sources. These tests are of 3 hours, each containing as expected 60 questions pertaining to Physics subject.

**3. Comprehensive level ( Part and Full test) -Test 23 to 25 AND 26 TO 28:** These are Full Length (FLT) covering all the levels of difficulty and all the types of questions similar to the IIT JAM paper. These tests will validate that your preparation is complete and you have achieved that extra edge to succeed in IIT JAM. Part test will again comprise of 60 questions each. In Part Tests number of topics are more compared to Major tests and eventually in Full tests you will have 60 questions from complete syllabus.

## **DISCLAIMER**

- Chem academy material is for the individual only. In case a student is found involved in any violation of copyrights of Chem academy material, the admission to the test series will be cancelled.
- We have facility of fee payment in cash too.
- Fee once paid is non-refundable and non-transferable in all circumstances
- Chem academy reserves all rights related to admission.
- Chem academy reserves all rights to make any changes in test series schedule/ test writing days and timing etc., if need so arises.

### **UNITWISE SYLLABUS, CONTENT & STANDARD REFERENCES**

<b>Unit No.</b>	<b>Topics</b>	<b>Syllabus covered (The list is indicative to help students; however, it is not exhaustive. A topic may have more subtopics)</b>	<b>Standard Reference Books</b>
1	<b>Mathematical Methods</b>	Calculus of single and multiple variables, partial derivatives, Jacobian, imperfect and perfect differentials, Taylor expansion, Fourier series. Vector algebra, Vector Calculus, Multiple integrals, Divergence theorem, Green's theorem, Stokes' theorem. First order equations and linear second order differential equations with constant coefficients. Matrices and determinants, Algebra of complex numbers.	Erwin kreyszig H.K Das
2	<b>Mechanics and General Properties of Matter</b>	Newton's laws of motion and applications, Velocity and acceleration in Cartesian, polar and cylindrical coordinate systems, uniformly rotating frame, centrifugal and Coriolis forces, Motion under a central force, Kepler's laws, Gravitational Law and field, Conservative and non-conservative forces. System of particles, Center of mass, equation of motion of the CM, conservation of linear and angular momentum, conservation of energy, variable mass systems. Elastic and inelastic collisions. Rigid body motion, fixed axis rotations, rotation and translation, moments of Inertia and products of Inertia, parallel and perpendicular axes theorem. Principal moments and axes. Kinematics of moving fluids, equation of continuity, Euler's equation, Bernoulli's theorem.	Herbert Goldstein H.C Verma J.C Upadhaya Resnick Halliday
3	<b>Oscillations, Waves and Optics</b>	Differential equation for simple harmonic oscillator and its general solution. Super-position of two or more simple harmonic oscillators. Lissajous figures. Damped and forced oscillators, resonance. Wave equation, traveling and standing waves in one-dimension. Energy density and energy transmission in waves. Group velocity and phase velocity. Sound waves in media. Doppler Effect. Fermat's Principle. General	David J Griffith H.C Verma (Part2)

Unit No.	Topics	Syllabus covered (The list is indicative to help students; however, it is not exhaustive. A topic may have more subtopics)	Standard Reference Books
		theory of image formation. Thick lens, thin lens and lens combinations. Interference of light, optical path retardation. Fraunhofer diffraction. Rayleigh criterion and resolving power. Diffraction gratings. Polarization: linear, circular and elliptic polarization. Double refraction and optical rotation.	
4	<b>Electricity and Magnetism</b>	Coulomb's law, Gauss's law. Electric field and potential. Electrostatic boundary conditions, Solution of Laplace's equation for simple cases. Conductors, capacitors, dielectrics, dielectric polarization, volume and surface charges, electrostatic energy. Biot-Savart law, Ampere's law, Faraday's law of electromagnetic induction, Self and mutual inductance. Alternating currents. Simple DC and AC circuits with R, L and C components. Displacement current, Maxwell's equations and plane electromagnetic waves, Poynting's theorem, reflection and refraction at a dielectric interface, transmission and reflection coefficients (normal incidence only). Lorentz Force and motion of charged particles in electric and magnetic fields.	Wolfgang K H Panofsky Wayne Saslow K.K Tiwari John Dirk Walecka
5	<b>Kinetic theory, Thermodynamics</b>	Elements of Kinetic theory of gases. Velocity distribution and Equipartition of energy. Specific heat of Mono-, di- and tri-atomic gases. Ideal gas, van-der-Waals gas and equation of state. Mean free path. Laws of thermodynamics. Zeroth law and concept of thermal equilibrium. First law and its consequences. Isothermal and adiabatic processes. Reversible, irreversible and quasi-static processes. Second law and entropy. Carnot cycle. Maxwell's thermodynamic relations and simple applications. Thermodynamic potentials and their applications. Phase transitions and Clausius-Clapeyron equation. Ideas of ensembles, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein	Garg, Bansal and Ghosh R.K Pathria F. Reif

Unit No.	Topics	Syllabus covered (The list is indicative to help students; however, it is not exhaustive. A topic may have more subtopics)	Standard Reference Books
		distributions.	
6	<b>Modern Physics</b>	Inertial frames and Galilean invariance. Postulates of special relativity. Lorentz transformations. Length contraction, time dilation. Relativistic velocity addition theorem, mass energy equivalence. Blackbody radiation, photoelectric effect, Compton effect, Bohr's atomic model, X-rays. Wave-particle duality, Uncertainty principle, the superposition principle, calculation of expectation values, Schrödinger equation and its solution for one, two and three dimensional boxes. Solution of Schrödinger equation for the one dimensional harmonic oscillator. Reflection and transmission at a step potential, Pauli exclusion principle. Structure of atomic nucleus, mass and binding energy. Radioactivity and its applications. Laws of radioactive decay.	Raj kumar Banwell and Mcash Beiser, Mahajan and Choudhary S.B Patel D.J Griffith N. Zettili
7	<b>Solid State Physics</b>	Crystal structure, Bravais lattices and basis. Miller indices. X-ray diffraction and Bragg's law; Intrinsic and extrinsic semiconductors, variation of resistivity with temperature. Fermi level	C. Kittel Gupta Kumar Sharma PuriBabbar
8	<b>Devices and Electronics</b>	p-n junction diode, I-V characteristics, Zener diode and its applications, BJT: characteristics in CB, CE, CC modes. Single stage amplifier, two stage R-C coupled amplifiers. Simple Oscillators: Barkhausen condition, sinusoidal oscillators. OPAMP and applications: Inverting and non-inverting amplifier. Boolean algebra: Binary number systems; conversion from one system to another system; binary addition and subtraction. Logic Gates AND, OR, NOT, NAND, NOR exclusive OR; Truth tables; combination of gates; de Morgan's theorem.	Streetman Boy and Nashelsky Ramakant A. Gayakwad Flyod

## **MINOR TESTS**

### **Scheduled Syllabus for Minor Test papers**

<b>S.No.</b>	<b>Topics</b>	<b>Dates</b>
1	Digital Electronics, DP Amp. , Solid state	22 October 2019
2	Quantum Mechanics, Vectors Analysis, Matrix	30 October 2019
3	Electrostatics, Semiconductors, Transistor	02 November 2019
4	Magnetostatics, EM wave	05 November 2019
5	Wave Oscillations, SHM, Damped Motion, Nuclear Chemistry	09 November 2019
6	Optics, KTG, Thermodynamics	12 November 2019
7	Fluid dynamics, Kepler's Law, Gravitation	16 November 2019
8	NLM, COM, Velocity & acceleration in 3D, Rotational Motion, Fourier series, Complex Analysis	19 November 2019

**Major Test Paper Schedule**

<b>S.No.</b>	<b>Topics</b>	<b>Dates</b>
1	NLM, COM, Velocity & acceleration in 3D, Rotational Motion, Solid state	16 December 2019
2	Fourier series, Complex Analysis, Digital Electronics, DP Amp.	20 December 2019
3	Quantum Mechanics, Semiconductors, Transistor, EM wave, Vectors Analysis	24 December 2019
4	Matrix, Electrostatics, Magnetostatics, Damped Motion, Nuclear Chemistry	28 December 2019
5	Wave Oscillations, SHM, Optics, Fluid dynamics	01 January 2020
6	KTG, Kepler's Law, Gravitation, Thermodynamics	06 January 2020

### **Part Test Paper Schedule**

<b>S.No.</b>	<b>Topics</b>	<b>Dates</b>
1	NLM, COM, Velocity & acceleration in 3D, Rotational Motion, Solid state, Fourier series, Complex Analysis, Digital Electronics, DP Amp	11 January 2020
2	Quantum Mechanics, Semiconductors, Transistor, EM wave, Vectors Analysis, Matrix, Electrostatics, Magnetostatics, Damped Motion, Nuclear Chemistry	15 January 2020
3	Wave Oscillations, SHM, Optics, Fluid dynamics, KTG, Kepler's Law, Gravitation, Thermodynamics	20 January 2020

#### **Full Test 1**

**Date: 25 Jan. 2020**

Complete Syllabus for JAM Physics
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#### **Full Test 2**

**Date: 30 Jan. 2020**

Complete Syllabus for JAM Physics
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#### **Full Test 3**

**Date: 04 Feb 2020**

Complete Syllabus for JAM Physics
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