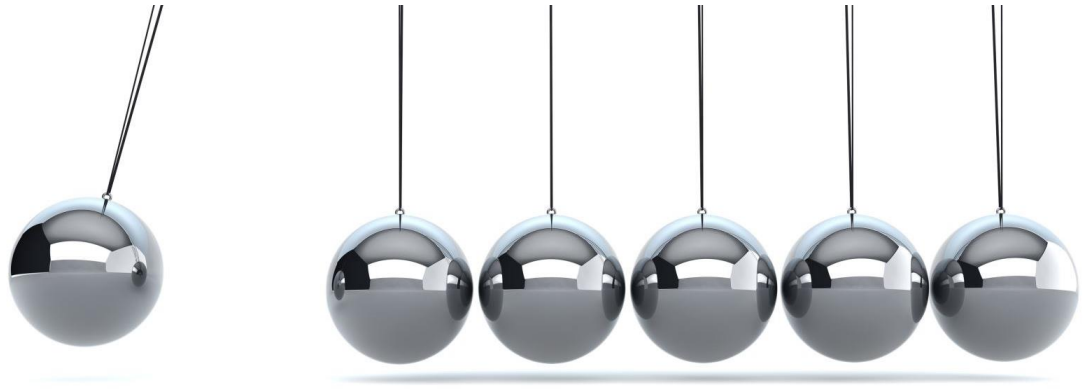

Gate Physics Syllabus Reverse Engineering

Most Important Topics of Gate Syllabus

1. Linear Algebra and Matrices
2. Complex Analysis
3. Differential Equations

4. Lagrangian Dynamics
5. Hamiltonian Dynamics
6. Canonical Transformation
7. Small Oscillations
8. Rigid Body Dynamics
9. Relativity

10. Electrostatics
11. Magnetostatics

12. Maxwell Equation
13. EM waves in free space, non-conducting and conducting media; reflection and transmission at normal and oblique incidences
14. Poynting vector, Poynting theorem, energy and momentum of electromagnetic wave

15. Postulates of Quantum Mechanics
16. Uncertainity Principle
17. Dirac Notations
18. Mathematical Formulation of QM
19. One Dimensional Potential Problems: Infinite well(1d,2d,3d), Finite Well, Harmonic Oscillator(1d,2d,3d), Step Potential, Tunneling.
20. Angular Momentum and Spin Momentum and addition rules
21. Time Independent Perturbation Theory

22. Microstates and Macro states
23. Phase Diagrams
24. Canonical Ensemble: Partition Function, Free energy and Calculation of Thermodynamic Quantities

25. Sectra of one electron atom: Bohar Model, Vector Model
26. Spin Orbit Interaction, Magnetic Moment
27. LS and JJ Coupling
28. Zeeman and Stark Effect
29. Electric Dipole Transition and Selection Rules
30. Raman Effect
31. Lasers

32. Crystal Structure
33. Reciprocal Lattice and XRay Diffraction
34. Lattice Vibrations and Thermal Properties of Solids: Free Electron Theory, Einstein Theory, Debye Model

35. Band Theory
36. semiconductors and insulators; conductivity, mobility and effective mass
37. Magnetic Properties of Solids
38. Superconductivity
39. Hall Effect

40. Transistors and biasing
41. Negative and Positive Feedback Systems
42. Oscillators
43. OPAMPS
44. Basic Digital Electronics

45. Nuclear Properties(Shape, Size, Radius, Charge Density, Quadrupole Moment, Magnetic Moment)
46. Nuclear Models (Shell Model, Liquid Drop Model)
47. Radioactivity: Basics, Alpha, Beta and Gamma Decay
48. Particle Physics

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Moderate Topics of Gate Syllabus

1. Fourier and Laplace Transforms
2. Fourier Series
3. Central Forces
4. Poisson Brackets
5. Image Problem
6. Multipole Expansion
7. Dielectric and Conductor
8. Polarization of Em Waves
9. Magnetic Materials Basics
10. QM of Hydrogen Atom
11. Scattering Theory and Born Approximation
12. Thermodynamics
13. Fermi Statistics
14. Phase Transitions
15. Vibration and Rotational Spectra of Molecules
16. X Ray Spectra
17. Bonding In Solids
18. Semiconductor Physics
19. PN Diodes
20. combinational and sequential circuits, flip-flops, timers, counters, registers, A/D and D/A conversion.
21. Nuclear Force and two nucleon(deuteron) Problem
22. Conservation Laws

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Topics which you can Leave

1. Special Functions
2. Tensors

3. Action-angle variables
4. Hamilton-Jacobi equation
5. Euler Angles
6. Rutherford Scattering
7. Symmetric Torque
8. Liouville's Theorm
9. Coupled Oscillations and Normal Modes
10. Inertia Tensor
11. Orthogonal Transformation

12. Sepration of Variables
13. Scalar and Vector Potential
14. Coloumb and Lorentz Gauges
15. Radiations

16. Variational Principle and WKB Approximation
17. Symmetries

18. Bose Einstein Statistics
19. Grand Canonical Ensemble
20. Fine and Hyperfine Structures
21. Electrical Spectra of Molecules
22. ERP, NMR and ESR

23. Optical properties of solids; Kramer's-Kronig relation, intra- and interband transitions
24. Dielectric properties of solid; dielectric function, polarizability, ferroelectricity

25. metal-semiconductor junctions; Ohmic and rectifying contacts
26. FET
27. Active Filters

28. Rutherford Scattering
29. Nuclear Reactions
30. Fision and Fusion
31. Accelerators and Detectors