



Yakeen 2.0 — Physics (XI & XII)

S.No.	Chapter Name	Lecture Content	No. of Lectures	Date of lecture	<i>Holidays</i>	
					Date	Occasion
1	BASIC MATHEMATICS USED IN PHYSICS AND VECTORS	Trigonometry(Angle, Trigonometric Ratios),Coordinate Geometry (Including Graphs)	7	24/09/2021		
2		Algebra(Quadratic Equations, Binomial Expressions, Logarithm, Componendo and Dividendo)		25/09/2021	02-Oct-21	Gandhi Jayanti
3		Differentialial Calculus		27/09/2021	15-Oct-21	Dussehra
4		Integral Calculus		28/09/2021	19-Oct-21	Eid-e-Milad
5		Addition and Subtraction of Vector		29/09/2021	04-Nov-21	Diwali
6		Scalar and Vector, Addition and Subtraction of Vector		30/09/2021	5-Nov-21	Diwali
7		Product of Vectors		01/10/2021	10-Nov-21	Chhat Pooja
8	Motion in a straight line	Kinematics qt, Average values, Uniformly Accelerated motion, Equations of motion	7	02/10/2021	19-Nov-21	Guru Nanak Jayanti
9		Motion Under Gravity		04/10/2021	25-Dec-21	Christmas Day
10		Question practice on equations of motion and motion under gravity		05/10/2021	1-Jan-22	New Year
11		Non-uniformly Accelerated Motion		06/10/2021	26-Jan-22	Republic Day
12		Non-uniformly Accelerated Motion		07/10/2021	19-Mar-22	Holi
13		Kinematics Graphs,Kinematics Graphs		08/10/2021		
14		Kinematics Graphs,Kinematics Graphs		09/10/2021		
15	Motion in a plane	2-D motion, Projectile motion. Ground to ground projectile.	7	11/10/2021		
16		Questions		12/10/2021		
17		Projectile from a tower		13/10/2021		
18		Relative concept, Relative in 1D motion		14/10/2021		
19		Relative Motion in 2D, Rain Man Problem,River Swimmer Problems, Wind Airplane problems etc,		15/10/2021		
20		Questions		16/10/2021		
21		Relative motion between two projectiles,Questions		18/10/2021		
22	Newton laws of motion	Force, Types,Wt. Measurement,Newton's three laws, Equilibrium of forces and free body diagrams, Common forces, Tension, Normal reaction	9	19/10/2021		
23		F.B.D., Constraint motion 1		20/10/2021		
24		Constraint motion 2		21/10/2021		
25		Question on application of Newton's Law,Different Pulley problems and ATWOOD machine,		22/10/2021		
26		Spring Force and spring Balance, ,Cutting of spring, Pseudo force.		23/10/2021		
27		Basics of friction, its cause, Types,Graph,Basics Questions		25/10/2021		
28		Questions on Kinetic and Statics friction,Angle Of friction,Angle of Repose ,		26/10/2021		
29		Problems on inclined plane ,Two Block Problems,		27/10/2021		
30		Questions		28/10/2021		

31	Work, Energy and Power	Work, Work Done by constant force, Work done by variable force	5	29/10/2021
32		Work energy theorem		30/10/2021
33		Potential energy, Conservative forces, Relation between force and potential energy		01/11/2021
34		Conservation of mechanical energy,		02/11/2021
35		Power,		03/11/2021
36	Circular Motion	Kinematics of Circular motion	4	04/11/2021
37		Circular motion on Horizontal plane, Questions,		06/11/2021
38		Centrifugal force, Banking of Road		08/11/2021
39		Vertical Circular Motion, Questions		09/11/2021
40	Center of mass	Center of mass, Centre of mass of system of discrete particles	7	11/11/2021
41		Center of Mass of Continuous bodies, Center of mass of composite bodies		12/11/2021
42		Centre of mass of truncated bodies and Centre of gravity, Motion of centre of mass		13/11/2021
43		Law of Conservation of linear momentum, Applications of conservation of linear momentum, Jumping from the cart, recoil of gun, Explosion of bombs		15/11/2021
44		Collision (Head on collision, Types of col)		16/11/2021
45		Various Cases on collision		17/11/2021
46		Collision in 2 dimensions		18/11/2021
47	System of Particles	Rigid body, Its K.E., P.E. Moment of inertia and its Calculation.	10	20/11/2021
48		MOI Of Composite objects, Cutting problems.		22/11/2021
49		Perpendicular axis theorem, parallel axis theorem, Problems on MOI, Radius of gyration		23/11/2021
50		Torque, Couple, Newton's second law in Rotation, Rotation About Fixed Axis,		24/11/2021
51		Angular Momentum, Rolling motion, Questions on Pure Rolling		25/11/2021
52		Rolling with Sliding, Mixed Questions, Conservation of mechanical energy problems		26/11/2021
53		Angular momentum, Conservation of angular momentum		27/11/2021
54		Problems on Angular momentum conservation, Equilibrium of rigid bodies, Toppling,		29/11/2021
55		questions		30/11/2021
56	Mechanical properties of solids	Stress, strain, Hooke's law, Modulus of elasticity, Stress-strain Curve, Analogy of spring, Elastic potential energy, Hanging wire, Breaking stress	1	01/12/2021
57	Mechanical properties of fluids	Pressure, Relative density, Variation of pressure with depth, Manometer, Barometer	8	02/12/2021
58		Pascal's Law, Hydraulic lift		03/12/2021
59		Buoyancy and Archimedes Principle, Questions,		04/12/2021
60		Liquid in accelerated containers		06/12/2021
61		Rotating Containers. , Types of flow, Bernoulli's Principle and		07/12/2021
62		Torricelli's equation, venturimeter, Questions.		08/12/2021
63		Surface tension, Excess pressure in a soap bubble and a liquid drop, capillary action		09/12/2021

64		.Viscosity, Stoke's law, Terminal velocity and miscellaneous problems		10/12/2021
65	Thermal Expansion	Temperature, Thermometry, Thermal expansion (Linear, superficial and cubical expansion), Thermal stress and strain	1	11/12/2021
66	Calorimetry	Calorimetry, Principle of calorimetry, Specific heat capacity, Molar heat capacity, Latent heat of fusion and vaporization. Water equivalent	1	13/12/2021
67	Kinetic theory of Gases	Postulates of Kinetic theory of gases, Ideal gas laws, Expression for pressure of an Ideal gas, Degrees of freedom,	2	14/12/2021
68		law of equipartition of energy, Maxwell Speed distribution curve, Mean free path, Mean free Time, Questions		15/12/2021
69	Thermodynamics	Zeroth law of thermodynamics, Heat, work and internal energy, Quasi static process, First law of thermodynamics, Thermodynamic processes (Isochoric, isobaric, isothermal, adiabatic, polytropic)	4	16/12/2021
70		Questions on Specific Heat, Indicator diagrams.		17/12/2021
71		Cyclic processes, Questions on Cycle		18/12/2021
72		Cyclic processes, Heat engine, Refrigerator, heat pump, Second law of thermodynamics, Carnot cycle, Reversible and Non reversible processes.		20/12/2021
73	Heat Transfer	Modes of heat transfer, Thermal conduction, Rods in series and parallel,	3	21/12/2021
74		Growth of ice on surface of lakes. Convection., Radiation, Stefan's Law, questions		22/12/2021
75		Newton's law of cooling, Wien's displacement law,		23/12/2021
76	SHM	Periodic motion, Simple harmonic motion, Equations of SHM, Phasors, Velocity and acceleration	5	24/12/2021
77		Questions on Phasors, Energy in SHM		27/12/2021
78		Spring Block systems, Questions period of SHM		28/12/2021
79		Angular SHM, Simple pendulum, different cases, questions .		29/12/2021
80		Compound pendulum, Questions. Torsional Pendulum, Damped oscillations,		30/12/2021
81	Wave Motion	Equation of wave, particle speed, particle acceleration, Sinusoidal wave	7	31/12/2021
82		Questions, Phasors, Wave speed on a string		03/01/2022
83		Power, Energy, Intensity of String Waves, Questions, Waves Superposition, Interference, Questions,		04/01/2022
84		Reflection & Transmission of waves, Standing Waves in a String,		05/01/2022
85		Question on Standing Waves, Sonometer, Energy & power in standing waves. Sound Waves, Speed, Equation, Effect of Different parameters,		06/01/2022
86		Power, Loudness, Intensity, pitch, Question on interference, Organ Pipe, End Correction		07/01/2022
87		Doppler Effect.		08/01/2022
88		Charge, Properties of charges, Methods of charging, Coulomb's Law		10/01/2022
89		Applications of Coulomb's law, Electrostatic field, Field due to a point charge, Null point.		11/01/2022
90		Field due to a ring, Field due to straight wires, field due to circular arcs, Questions.		12/01/2022

91	Electrostatics	Motion of charged particles in a uniform electric field. Electric lines of force, Electric flux	11	13/01/2022
92		Gauss Law, Applications of Gauss law (Infinite charged wire, sheet, spheres, cylinder)		14/01/2022
93		Electric potential and potential energy		15/01/2022
94		Electric dipole, Field and potential due to dipoles at axial, equatorial and general points, Dipole in external uniform and non uniform electric field		17/01/2022
95		Conductors, Properties of conductors in electrostatics, Shielding effect of conductors, Earthing of conductors, Self Energy, Plate concept,		18/01/2022
96		Conductors, Properties of conductors in electrostatics, Shielding effect of conductors, Earthing of conductors,		19/01/2022
97		Self Energy,		20/01/2022
98		Plate concept		21/01/2022
99	Gravitation	Newton's Law of Gravitation, Acceleration due to gravity, Variation in acceleration due to gravity due to height, depth and rotation of earth	4	22/01/2022
100		Gravitational Field, Gravitational potential, Potential due to a point mass, potential due to a ring, potential due to spheres		24/01/2022
101		, Gravitational potential energy, Relation between potential and potential energy.		25/01/2022
102		Escape velocity, Orbits, circular orbits, satellites, geostationary satellites, Kepler laws, Questions, Questions.		27/01/2022
103	Current Electricity	Electric current & Current density; Relation Between Current and Current Density	8	28/01/2022
104		Relation Between Current Density, Conductivity and Electric Field, Ohms Law; Drift of Electrons and the Origin of Resistivity.		29/01/2022
105		Resistivity of Various Materials; Temperature Dependence of Resistivity; Electric resistance and combination,		31/01/2022
106		, Questions on various methods, Symmetric circuits		01/02/2022
107		Kirchhoff's law and its application,		02/02/2022
108		Emf of cells, terminal potential, grouping of cells, internal Resistance; maximum power transfer theorem, Bulbs,		03/02/2022
109		Conversion of galvanometer into ammeter and voltmeter,		04/02/2022
110		meter bridge, potentiometer		05/02/2022
111	Capacitor	Capacitor, capacitance, Energy stored in a charged capacitor, Force between plates of capacitor	5	07/02/2022
112		Kirchhoff's law, Combination of capacitors		08/02/2022
113		Dielectrics, Combination of dielectrics, Variation of Q, C, V, E, U and force when a dielectric is inserted in a capacitor,		09/02/2022
114		Miscellaneous problems, Capacitance of different geometry like Spherical, Cylindrical		10/02/2022
115		RC Circuits.		11/02/2022
116		Magnetic Lorentz force, Motion of a charge particle in magnetic field, electric field and combined field, Velocity selector, Mass spectrometer, Cyclotron,		12/02/2022
117		Magnetic force on a current carrying conductor, Force between parallel current carrying wires, Magnetic dipole, Torque current carrying loop,		14/02/2022

118	Magnetic Effects of Current	Biot Savart Law, Field due to a straight current carrying wire and circular arc, Magnetic field on the axis of a current carrying circular coil, Questions	5	15/02/2022
119		Ampere circuital law, Applications of Ampere circuital law (infinite wire, infinite sheet, cylinders(hollow and solid),		16/02/2022
120		Solenoid, toroid, Random Questions		17/02/2022
121	Magnetism and matter	Bar Magnet, Bending and Cutting of Bar magnet, Time period of oscillations, magnetic field due to bar magnet at axial, equatorial and general point, magnetic field lines, Earth Magnetism, Angle of dip, angle of declination.	2	18/02/2022
122		Magnetic properties of matter, Diamagnetic, Paramagnetic, and Ferromagnetic substances, Magnetic Susceptibility, Magnetic hysteresis, permanent magnets and electromagnets.		19/02/2022
123	Electromagnetic Induction	Magnetic Flux, Faraday Laws of EMI, Applications, Lenz's Law, Questions	6	21/02/2022
124		Motional Emf, Questions,		22/02/2022
125		Induced electric field, Self and Mutual inductance, Inductors in circuits,		23/02/2022
126		Questions, Energy stored in inductors,		24/02/2022
127		LC oscillations		25/02/2022
128		Growth and Decay of current in an inductor, Question AC generator		26/02/2022
129	Alternating Current	Introduction to AC, Average and RMS values of AC, Phasor	4	28/02/2022
130		diagrams, Resistor, capacitor and inductor in AC, Power in AC circuits		01/03/2022
131		"AC Voltage Applied to a Series LCR Circuit; Resonance;"		02/03/2022
132		Quality Factor and bandwidth, Transformers, Questions on LCR circuits.		03/03/2022
133	Electromagnetic Waves	Maxwell's Equations of Electromagnetism, Displacement current, equations of EM waves,	2	04/03/2022
134		energy density of electric and magnetic field, Properties of EM spectrum.		05/03/2022
135	Ray Optics	Laws of reflection, Plane Mirrors, Velocity Concept, Two mirror system.,	8	07/03/2022
136		Spherical Mirrors, Mirror formula,		08/03/2022
137		Magnification, Longitudinal Magnification, Speed of images.		09/03/2022
138		Laws of refraction, refraction at plane surface, refraction at curved surface, slabs.		10/03/2022
139		Lens, power of lens, Combination of lenses, Cutting of lenses,		11/03/2022
140		silvering of lenses, Principle of reversibility, Displacement method		12/03/2022
141		Prisms, Dispersion, combination of prisms		14/03/2022
142		Eye, Defects of vision, correcting lens, optical instruments, Microscope, Astronomical telescope, Reflecting telescope (cassagrain)		15/03/2022
143	Wave Optics	Wavefronts, Wavelets, Huygen's principle, Interference,	5	16/03/2022
144		YDSE, Random Questions, Slab in front of slits,		17/03/2022
145		Questions, Thin film interference		18/03/2022

146	Wave Optics	Diffraction (Single slit experiment), Resolving power of microscope and telescope,	5	21/03/2022
147		Polarization, Law of malus, Brewster Law. Doppler effect in light, Random Questions		22/03/2022
148	Dual Nature of Radiation and Matter	De Broglie Hypothesis, Photon Theory,	3	23/03/2022
149		Question. P Photon theory, Radiation Pressure.		24/03/2022
150		photoelectric effect, Dual Nature of light, Einstein's Photoelectric Equation, Question		25/03/2022
151	Atoms	Thomson's Model, Rutherford's Model and Bohr's Model, Radius,	5	26/03/2022
152		velocity and energy in Bohr's orbits, Questions		28/03/2022
153		Excitation and Ionisation of atoms; Results of Bohr Model;		29/03/2022
154		Rydberg's formula, hydrogen spectral series, limitations of Bohr's model,		30/03/2022
155		X-Rays		31/03/2022
156	Nuclei	Introduction to Nucleus, Einstein's Mass energy equivalence, Nuclear Force,	4	01/04/2022
157		Binding energy, Binding energy per nucleon		02/04/2022
158		Radioactivity, Law of radioactivity, Nuclear Fission and Fusion Reaction,		04/04/2022
159		Q energy of nuclear reaction, Questions		05/04/2022
160	Semiconductor and Communication	Classification of Metals, Conductors and Semiconductors, energy bands;	5	06/04/2022
161		; Intrinsic Semiconductor; Extrinsic Semiconductor; p-n Junction; Semiconductor diode, zener diode;		07/04/2022
162		Application of Junction Diode as a Rectifier, Special Purpose p-n junction Diodes		08/04/2022
163		Junction Transistor		09/04/2022
164		Digital Electronics and Logic gates		11/04/2022
165				12/04/2022
166	Communication system	Elements of comm systems, AM	1	13/04/2022
167	Units & Measurement	Physical World, Scope and excitement of physics, Scientific Method; Units and Dimensions, The international system of units; Classification of Units; Dimensions of physical quantities, Application of dimensional analysis, Dimensional formulae and dimensional equations;	3	14/04/2022
168		Limitation of dimensional analysis; Significant figures; Order of Magnitude; Accuracy, precision; Errors in Measurements		15/04/2022
169		Representation and Propagation of Errors; Least Count		16/04/2022