

PHYSICS (HONS.) 2017-18									
Paper	First Term July 14 – Oct 14	No of Lectures	Faculty	Second Term Nov 14 – Jan 15	No of Lectures	Faculty	Third Term Feb 15 - June 15	No of Lectures	Faculty
I	Unit-I			Unit-I			Unit-I		
	1. Mathematical Methods I	30		2. Mathematical Methods II	22		2. Mathematical Methods II	08	
	i) Preliminary Topics	12	GDP	i) Ordinary Differential Eq.	08	GDP	iii) Fourier Series	08	GDP
	ii) Vector Analysis	12	GDP	ii) Partial Differential Eq	14	GDP			
	iii) Matrices	06	BC						
				Unit-II			Unit-II		
				1.Waves and Optics I			1.Waves and Optics I		
				i) LHO	08	GL	ii) Waves	06	GL
				iii) Fermat's Principle	04	GL	v) Wave theory of light	06	GL
				iv) Cardinal points of an optical system	06	GL			
	2. Electronics I	12		2. Electronics I	10		2. Electronics I	08	
	i) Network	04	PS	ii) Semiconductors diodes	03	PS	iv) FET	08	PS
	v) Digital electronics	08	PS	iii) BJT	07	PS			
IIA	Unit-I			Unit-I			Unit-I		
	1.Classical Mechanics I	04		1.Classical Mechanics I	11		1.Classical Mechanics I	14	
	i) Mechanics Of a single particle	04	BC	i) Mechanics Of a single particle (Cont..)	04	BC	iii) Rotational Motion	14	BC
				ii)Mech. Of a system particle	07	BC			
	2.Thermal Physics I	10		2.Thermal Physics I	13		2.Thermal Physics I	07	
	i) Kinetic theory of gases	10	SN	ii) Transport Phenomena	05	SN	v) Radiation	07	SN
				iii) Real gases	05	SN			
				iv) Conduction of Heat	03	SN			

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III	Unit-I			Unit-I			Unit-I		
	1. Electronics II	10		1. Electronics II	13		1. Electronics II	07	
	i) Amplifier	05	PS	iii) OP-AMP	05	PS	v) Sequential logic	03	PS
	ii) Oscillators	05	PS	iv) Combinational logic	05	PS	vi) Communication principle	04	PS
				v) Sequential logic	03	PS			
	2. Electricity and Magnetism	11		2. Electricity and Magnetism	10		2. Electricity and Magnetism	10	
	i) Magnetic effect of steady current	06	GL	ii) Field and Magnetic material	10	GL	iii) Electromagnetic induction	10	GL
	i) Magnetic effect of steady current	05	GL						
	Unit-II			Unit-II			Unit-II		
	1. Electrostatics	11		1. Electrostatics	14		1. Electrostatics	04	
	i) Units and dimensions	03	SN	iii) Multipole expansion	07	SN	v) Electrical image	04	GDP
	ii) Gauss' law	08	SN	iv) Dielectrics	07	GDP			
	2. Wave and Optics	10		2. Wave and Optics	12		2. Wave and Optics	08	
	i) Interference of light waves	10	BC	ii) Diffraction of light waves	12	BC	iii) Polarization	08	BC
IVA	Unit-I			Unit-I			Unit-I		
	1. Quantum Mechanics I	10		1. Quantum Mechanics I	12		1. Quantum Mechanics I	08	
	i) Old quantum theory	06	GDP	ii) Basic quantum mechanics Compton effect	08	GDP	iii) Basic Postulates of QM (Cont.)	08	GDP
	ii) Basic quantum mechanics up to Double slit expt.	04	GDP	ili) Basic Postulates of QM	04	GDP			
	2. Thermal Physics II	11		2. Thermal Physics II	13		2. Thermal Physics II	11	
	i) Basic concepts	03	SN	ii) 1 st law of Thermodynamics part-II	03	SN	iv) Thermodynamic functions	05	SN
	ii) 1 st law of Thermodynamics part-I	08	SN	iii) 2 nd law of Thermodynamics	10	SN	v) Change of state	06	SN

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V	Unit-I			Unit-I					
	1. Classical Mechanics II	16		1. Classical Mechanics II	13				
	i) Central Force Problem	09	GL	iii) Lagrangian and Hamiltonian formulation of Classical Mechanics	13	GL			
	ii) Mechanics of Ideal Fluid	07	GL						
	2. Special Theory of Relativity	11		2. Special Theory of Relativity	13				
	i) Introduction	04	SN	iii) Vectors and Tensors	07	SN			
	ii) Special Theory of Relativity	07	SN	iv) Invariant Intervals	06	SN			
	Unit-II			Unit-II					
	1. Quantum Mechanics II	30		2. Atomic Physics	17				
	i) Time dependent and time independent Schrodinger Eqn.	05	GDP	i) Atomic Spectra	12	GL			
	ii) Simple Application of Quantum Mechanics	13	GDP	ii) Vector atom model	05	GL			
	iii) Schrodinger Eq. in Spherical polar co-ordinate	12	GDP	iii) Many electron model	03	GL			
				iv) Molecular Spectroscopy	04	GL			
				v) Laser Physics	06	GL			

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VI	Unit-I			Unit-I					
	1. Nuclear and Particle Physics I	30		2. Nuclear and Particle Physics II	30				
	i) Bulk properties of Nuclei	06	PS	i) Nuclear reactions	05	PS			
	ii) Nuclear structure	10	PS	ii) Nuclear fission and fusion	06	PS			
	iii) Unstable Nuclei			iii) Elementary particles					
	a) Alpha decay	04	PS	a) Four basic interactions	04	PS			
	b) Beta decay	05	PS	b) Classifications	05	PS			
	c) Gama decay	05	PS	iv) Particle accelerator and detector	04	PS			
				v) Nuclear Astrophysics	06	PS			
	Unit-II			Unit-II					
	1. Solid State Physics I	30		2. Solid State Physics II	30				
	i) Crystal Structure	12	BC	i) Dielectric Property of materials	05	BC			
	ii) Structure of Solids	18	BC	ii) Magnetic properties of materials	12	BC			
				iii) Lattice Vibrations	07	BC			
				iv) Super conductivity	06	BC			
VIIA	Unit-I			Unit-I					
	1. Statistical Mechanics	30		2. Electromagnetic Theory	30				
	i) Microstates and Macrostates	07	SN	i) Generalization of Ampere's law	09	GDP			
	ii) Classical Stat. Mach.	03	SN	ii) EM Wave in an isotropic dielectric	07	GDP			
	iii) Motivations for Quantum Statistics	06	SN	iii) EM Waves in conducting medium	06	GDP			
	iv) Quantum Statistical Mechanics	14	SN	iv) Dispersion	04	GDP			
				v) Scattering	04	GDP			

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I	Group-A			Group-A			Group-A		
	Unit I: Classical Mechanics & Gravitation	25		Unit I: Classical Mechanics & Gravitation	25		Unit I: Classical Mechanics & Gravitation	25	
	1. Dimensions of physical quantities	2	GL	3. Mechanics of a particle	8	GL	4. Dynamics of rigid bodies	5	PS
	2. Vectors	5	GL				5. Gravitation	5	PS
	Unit II: Heat and Thermodynamics	25		Unit II: Heat and Thermodynamics	25		Unit II: Heat and Thermodynamics	25	
	1. Kinetic theory of gases	7	SN	3. Thermodynamics	8	SN	4. Radiation	5	SN
	2. Thermal conductivity	5	SN						
	Group-B			Group-B			Group-B		
	Unit I: General Properties of Matter	20		Unit I: General Properties of Matter	20		Unit I: General Properties of Matter	20	
	1. Elasticity	6	GDP	2. Viscosity	7	GDP	3. Surface tension	7	GDP
	Unit II: Waves & Vibrations	15		Unit II: Waves & Vibrations	15				
	1. Simple harmonic motion	3	BC	3. Differential equation of wave motion	4	BC	3. Differential equation of wave motion (Cont...)	3	BC
	2. Superposition of SHM	5	BC						
	Unit III: Geometrical Optics	15		Unit III: Geometrical Optics	15		Unit III: Geometrical Optics	15	
	1. Reflection & Refraction	6	PS	2. Optical instruments	6	PS	2. Optical instruments (Cont....)	3	PS

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IIB	Electricity and Magnetism	50		Electricity and Magnetism	50		Electricity and Magnetism	50	
	1. Electrostatics	6	GDP	5. Mag. effect of current	6	GDP	9. Varying currents	5	BC
	2. Capacitor	3	GDP	6. Lorentz force	4	GDP	10. Alternating current	6	BC
	3. Steady current	5	GDP	7. Magnetic materials	6	BC			
	4. Thermoelectricity	5	GDP	8. E-M induction	4	BC			
IIIA	Unit I: Physical Optics	15		Unit I: Physical Optics	15		Unit I: Physical Optics	15	
	1. Light as an E-M wave	4	GL	3. Diffraction	4	GL	4. Polarization	3	GL
	2. Interference of light	4	GL						
	Unit II: Electronics	15		Unit II: Electronics	15		Unit II: Electronics	15	
	1. Diodes & Transistors	5	PS	2. Digital circuits	5	PS	3. Logic gates	5	PS
	Unit III: Modern Physics	20		Unit III: Modern Physics	20		Unit III: Modern Physics	20	
	1. Special theory of relativity	3	SN	3. Basic quant. mechanics	5	SN	5. Nuclear physics	5	SN
	2. Quantum theory of rad ⁿ .	3	SN	4. Solid state physics	4	SN			
IVA	Unit I: Pumps, Gauges and Engine	10		Unit II: Energy sources	15				
	1. Production & measurement of high vacuum	5	GDP	1. Conventional energy sources	5	GDP			
	2. Engines	5	GDP	2. Non- Conventional energy sources	5	GDP			
	Unit III: Electronics	15		Unit IV: Communications	10				
	1. Feedback	5	PS	1. Propagation of Electromagnetic waves	3	BC			
	2. Digital electronics	5	PS	2. Transmission of Electromagnetic waves	4	BC			
	3. Instruments	3	PS	3. Transm ⁿ . through media	3	BC			