BLUE PRINT FOR QUESTION PAPER

APPLIED PHYSICS II (R - 2012)

FE - SEM II

Contentwise Blue-print of of Q.P.

Module No.	Unit No.	Unit Title (and contents)	Unit wise Marks*	Module wise Total Marks*
01	1.1	Interference in thin film - Introduction, interference due to reflected and transmitted light by thin transparent parallel film, origin of colours in thin film, Wedge shaped thin film, Newton's rings	10	**33**
	1.2	Applications of interference - Determination of thickness of very thin wire or foil, determination of refractive index of liquid, wavelength of incident light, radius of curvature of lens, testing of surface flatness, non-reflecting films, Highly reflecting film	10	
	1.3	Diffraction of Light – Introduction; Fraunhoffer diffraction at single slit, Fraunhoffer diffraction at double slit, diffraction due to N- slits (Diffraction Grating), missing orders, Highest possible orders, determination of wavelength of light with a plane transmission grating; resolving power of a grating, dispersive power of a grating.	13	
02	2.1	**Fibre optics :** Introduction, total internal reflection, basic construction, optical fibre as light guide and types of optical fibre; Numerical Aperture and maximum angle of acceptance, Numerical Aperture for graded index fibre; V-number, Maximum number of possible orders; Losses in optical fibre; Merits of optical fibre; Applications.	10	**20**
	2.2	**Lasers :** Quantum processes as absorption, spontaneous emission and stimulated emission, metastable states, population inversion, pumping, resonance cavity, Einsteins's equations, Helium Neon laser, Nd:YAG laser, Semiconductor laser, Applications of laser-	10	

		Holography (construction and reconstruction of holograms) and other applications.		
03	3.1	Introduction, Wave particle duality, de Broglie wavelength, experimental verification of de Broglie theory, properties of matter waves, wave packet, group velocity and phase velocity, Wave function, Physical interpretation of wave function	05	**18**
	3.2	Heisenberg's uncertainty principle, Electron diffraction experiment and Gama ray microscope experiment, Applications of uncertainty principle,	05	
	3.3	Schrodinger's time dependent wave equation, time independent wave equation - Motion of free particle, Particle trapped in one dimensional infinite potential well.	08	
04	4.1	Electrostatic focusing, Magnetostatic focusing, Cathode ray tube (CRT), Cathod ray Oscilloscope (CRO), Application of of CRO,	08	**08**
05	5.1	Introduction, Meissner Effect, Type I and Type II superconductors, BCS Theory(concept of Cooper pair), Josephson effect, Applications of superconductors - SQUID, MAGLEV	07	**07**
06	6.1	Introduction to nano-science and nanotechnology, Two main approaches in nanotechnology - Bottom up technique and top down technique, Tools used in nanotechnology such as Scanning electron microscope, Scanning Tunneling Microscope, Atomic Force Microscope, Nano materials: Methods to produce nanomaterials, Applications of nanomaterials, Different forms of carbon nanoparticles, carbon nanotubes, properties and applications.	10	**10**
Grand Total				**96#**

* Variation up to ±2 marks is possible in the total marks for the module
# Grand total includes all optional Q. Nos. from 2 to 6 and internal options of Q. No. 1

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Total 6 questions of 15 marks each

Q.1. Compulsory Will contains 7 bits of 3marks each.

Solve any **Three** from (Q.2 to Q.6)

Question		Marks	Unit No
Q.1	**(a)**	**03**	1.1
	(b)	**03**	1.3
	(c)	**03**	2.1
	(d)	**03**	2.2
	(e)	**03**	3.3
	(f)	**03**	4.1
	(g)	**03**	5.1
Q.2	**(a)**	**08**	1.2
	(b)	**07**	2.1
Q.3	**(a)**	**08**	2.2
	(b)	**07**	1.1
Q.4	**(a)**	**05**	1.3
	(b)	**05**	3.2
	(c)	**05**	5.1
Q.5	**(a)**	**05**	1.3
	(b)	**05**	3.3
	(c)	**05**	6.1
Q.6	**(a)**	**05**	3.1
	(b)	**05**	4.1
	(c)	**05**	6.1

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Distribution of Marks :

Module No.	Unit No.	Weightage	Q. 1 (comp) 3 x 7	Q. 2 (opt) 8+7	Q. 3 (opt) 8+7	Q. 4 (opt) 5+5+5	Q. 5 (opt) 5+5+5	Q. 6 (opt) 5+5+5	Weightage for Module
01	1.1	**10**	03		07				**33**
	1.2	**10**		08					
	1.3	**13**	03			05	05		
02	2.1	**10**	03	07					**20**
	2.2	**10**	03		08				
03	3.1	**05**						05	**18**
	3.2	**05**				05			
	3.3	**08**	03				05		
04	4.1	**08**	03					05	**08**
05	5.1	**07**	03			05			**07**
06	6.1	**10**					05	05	**10**
Total		**96 (60)**	**21 (15)**	**15**	**15**	**15**	**15**	**15**	**96**