

BLUE PRINT FOR QUESTION PAPER
APPLIED PHYSICS – II (R-2012)
FE – SEM-II

Content wise Blue – print 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 films	10	
	1.3	Diffraction of Light – Introduction; Fraunhofer diffraction at single slit, Fraunhofer 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 grating.	13	
02	2.1	Fiber Optics: Introduction, total internal reflection, basic construction, optical fiber as light guide and types of optical fiber; Numerical Aperture for graded index fiber; V number, Maximum number of possible order; Losses in optical fiber; Merits of optical fiber; Application.	10	20
	2.2	Lasers: Quantum processes as absorption, spontaneous emission and stimulated emission and stimulated emission, metastable states, population inversion pumping, resonance cavity, Einstein’s equation, Helium Neon laser, Nd:YAG laser, Application of laser- Holography (Construction and reconstruction of	10	

		holograms) and other application.		
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, Application 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), Cathode ray Oscilloscope (CRO), Application of CRO,	08	08
05	5.1	Introduction, Meissner Effect, Type I and Type II superconductors, BCS Theory(concept of cooper pair), Josephson effect, Application 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, Nanomaterials : Method to produce nano materials, Application of nanomaterials, Different forms of carbon nanotubes, properties and application	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 option of Q. no.1

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Total 6 questions of 15 marks each

Q.1. Compulsory will contain 7 bits of 3 marks each.

Solve any 3 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

