

## BLUE PRINT FOR QUESTION PAPER

### APPLIED PHYSICS –I (R-2012)

#### FE SEM-I

Module No.	Unit No.	Unit Title (and Contents)	Unit wise Marks*	Module wise Total Marks*
01	1.1	Crystallography: Space lattice, Unit cell, Lattice parameters, Bravais lattices and Crystal systems, Cubic crystal system and lattices; Density and Packing Fraction; Miller indices of crystallographic planes and directions; interplanar distance; Diamond structure, NaCl structure, HCP structure, BaTiO <sub>3</sub> structure; Ligancy and Critical radius ratio.	20	32
	1.2	Determination of crystal structure using XRD techniques: Laue method, Bragg method, powder method	07	
	1.3	Real crystals, point defects, photonic crystals, liquid crystal phases and applications in LCD	05	
02	2.1	Semiconductor: from energy bands and classification of solids, concept of holes, effective mass, drift, mobility, conductivity, intrinsic and extrinsic semiconductors	08	28
	2.2	Fermi-Dirac function and Fermi level in conductor, insulator, intrinsic and extrinsic semiconductor, effect of impurity concentration and temperature on the Fermi level	07	
	2.3	Hall effect (applied electric field along x-axis and applied magnetic field along z-axis) and its application	05	
	2.4	Drift and diffusion of charge carriers to photovoltaic solar cell (refer to the syllabus)	08	
03	3.1	Dielectric materials	08	20
	3.2	Magnetic materials	12	
04	4.1	Acoustics	08	16
	4.2	Ultrasonics	08	
<b>GRAND TOTAL</b>				<b>96#</b>

\*Variation up to  $\pm 2$  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

**APPLIED PHYSICS I (R- 2012) , FE SEM – I**

**Total 6 questions of 15 marks each**

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

Solve any 3 from (Q.No. 2 to Q.No. 6)

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<b>Question</b>	<b>Marks</b>	<b>Unit No.</b>	
Q.1	(a)	03	1.1
	(b)	03	2.2
	(c)	03	2.4
	(d)	03	3.1
	(e)	03	3.2
	(f)	03	4.1
	(g)	03	4.2
Q.2	(a)	08	2.1
	(b)	07	1.1
Q.3	(a)	08	3.2
	(b)	07	1.2
Q.4	(a)	05	1.1
	(b)	05	2.2
	(c)	05	3.1
Q.5	(a)	05	1.1
	(b)	05	2.3
	(c)	05	4.1
Q.6	(a)	05	1.3
	(b)	05	2.4
	(c)	05	4.2

