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 & lattices; Density & Packing Fraction; Miller indices of crystallographic planes & directions; interplanar distance; Diamond structure, NaCl structure, HCP structure, BaTiO3 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 & 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	8	**20**
	3.2	Magnetic materials	12	
04	4.1	Acoustics	8	**16**
	4.2	Ultrasonics	8	
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

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

Question		Marks	Unit No
	(a)	**03**	1.1
	(b)	**03**	2.2
	(c)	**03**	2.4
Q.1	**(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

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

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	**20**	03	07		05	05		**32**
	1.2	**07**			07				
	1.3	**05**						05	
02	2.1	**08**		08					**28**
	2.2	**07**	03			05			
	2.3	**05**					05		
	2.4	**08**	03					05	
03	3.1	**08**	03			05			**20**
	3.2	**12**	03		08				
04	4.1	**08**	03				05		**16**
	4.2	**08**	03					05	
Total		**96 (60)**	**21 (15)**	**15**	**15**	**15**	**15**	**15**	**96**

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