BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
HYDERABAD CAMPUS
FIRST SEMESTER 2016-2017
Course Handout (Part - II)

Date: 30/04/2016

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : **CHEM F326**
Course Title : **Solid State Chemistry**
Instructor in Charge : **Sounak Roy**

1 . **Scope and Objective of the Course**: This course emphasis the concepts in solid state chemistry through the comprehensive survey of different synthetic techniques, their characterization, and their properties. Focus will be given on the structure-property relationship of materials. Introduction to nanomaterials with recent advances in material science and technology is also provided.

2. Text Book:
(A) 'Solid State Chemistry and its Applications', Anthony R. West, Wiley-India Edition 2007.

3. Reference Books:
(A) 'Nanomaterials Chemistry – Recent Developments and New Directions', Edited by C.N.R.Rao, A. Mueller, A.K.Cheetham, Wiley-Vch Edition 2007.
(B) Materials Science and Engineering-an Introduction by William d.callister, jr. Seventh Edition, John Wiley (2007)
(C) Material Science and Engineering by V. Raghavan, Fifth Edition, Prentice-Hall of India private Limited (2004)

4. Course Plan:

Lecture Number	Topics to be covered	Text
1	What is Solid State Chemistry?	TB-A Ch 1
2-5	Preparative Methods	TB-A Ch 2
6 –8	Characterization of Inorganic Solids – application of physical techniques, Thermal Analysis, X-Ray Diffraction	TB-A Ch 3, 4 & 5
9-11	Crystal Structures – Descriptive Crystal Chemistry, Factors influencing the crystal structures	TB-A Ch 7 & 8
12-13	Crystal Defects and Non-Stoichiometry	TB-A Ch 9
14-16	Solid Solutions	TB-A Ch 10

17-18	Ionic Conductivity and Solid Electrolytes	TB-A Ch 13
20-22	Electronic properties and band Theory: Metals, Semiconductors, Inorganic Solids, Color	TB-A Ch 14
23-26	Electrical Properties	TB-A Ch 15
27-31	Magnetic Properties	TB-A Ch 16
32-34	Optical Properties: Luminescence, Lasers	TB-A Ch 17
36-42	Nanomaterials Chemistry: Synthesis, properties and new developments	RB-A Ch 1-5

5. Evaluation Scheme:

Component	Duration	Weightage	Date Time	Remarks
Test-I	1 hour	20%		Closed book
Test-II	1 hour	20%		Closed book
Assignment + Presentation	-	20%	-	Open Book/Take Home
Comprehensive Examination	3 hours	40%		Closed book

6. **Chamber Consultation Hours**: Will be announced in class and notified in Notice board.

7. **Make-up-policy**: Make up would be considered only for **genuine reasons**.

Instructor-in-charge
CHEM F326