

SYLLABUS FOR PANJAB UNIVERSITY

B.A./B.SC. (GENERAL) FIRST YEAR (SEMESTER SYSTEM)
SEMESTER II

PAPER V-INORGANIC CHEMISTRY-B

Time : 3 Hrs.
Max. Marks : 22+3
30 Hrs. (2 Hrs/week)
3 Periods/week

OBJECTIVE OF THE COURSE

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester System) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

UNIT-I (7 Hrs.)

Chemical Bonding-I

Ionic Solids – Concept of close packing, Ionic structures, (NaCl type, Zinc blende, Wurtzite, CaF_2 and antiferite), radius ratio rule and coordination number, limitation of radius ratio rule, lattice defects, semiconductors.

UNIT-II (8 Hrs.)

Chemical Bonding-II

Lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule. Metallic bond-free electron, valence bond and band theories. Weak Interactions – Hydrogen bonding, Van der Waals forces.

UNIT-III (7 Hrs.)

p-Block Elements-I

Comparative study (including diagonal relationship) of groups 13-14 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13-14, hydrides of boron-diborane and higher boranes, borazine, borohydrides, fullerenes, carbides, fluorocarbons.

UNIT-IV (8 Hrs.)

p-Block Elements-II

Comparative study of groups 15-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 15-17, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

SYLLABUS FOR PUNJABI UNIVERSITY

SEMESTER II

PAPER-I

INORGANIC CHEMISTRY

Max Marks : 35

Semester Paper : 26

Internal Assessment : 9

Pass Marks : 35%

INSTRUCTIONS FOR THE PAPER SETTER

The question paper will consist of three sections : A, B and C. Sections A and B will have four questions each from the respective section of the syllabus and will carry 4 marks each. Section C will consist of 5 short answer questions that will cover the entire syllabus and will be of 2 marks each. Use of scientific non-programmable calculator is allowed.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions (Section C 9th question being compulsory) selecting two questions from each of A and B Sections.

SECTION-A

1. Ionic Solids

Concept of close packing, Ionic structures, (NaCl type, Zinc blende, Wurtzite, CaF_2 , and antiferite), radius ratio rule and coordination number, Limitation of radius ratio rule, lattice defects, semiconductors, lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule. Metallic bond-free electron, valence bond and band theories.

2. s-Block Elements

Comparative study, diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in biosystems, an introduction to alkyls and aryls.

3. Group No. 13

Comparative study (including diagonal relationship) of groups 13 elements, compounds like hydrides, oxides, oxyacids and halides of group 13 ; hydrides of boron-diborane and higher boranes, borazine, borohydrides.

SECTION-B

4. p-Block Elements

Comparative study (including diagonal relationship) of groups 14-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 14-17 ; fullerenes, carbides, fluorocarbons, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

30 hours

Time allowed - 3 hrs

3 period/week

5 hrs.

5 hrs.

5 hrs.

15 hrs.