Ceramic science

(lesson plan)

|  |  |  |
| --- | --- | --- |
| Sl no. | topics | Number of classes required |
|  |  Discuss Atomic Structure in details  | One period |
|  | Discuss the importance of the periodic table | One period |
|  | Explain electronic configuration of atoms | One period |
|  | Define Chemical Bonding | One period |
|  |  State and explain different types of bonds like Ionic, covalent, metallic, vander walls and Hydrogen bond  | Two period |
|  | Bond energy and Bond strength | One period |
|  | State and explain different physical properties based on chemical bond | One period |
|  | Define Crystal system | One period |
|  | Explain different types of crystal system  | One period |
|  | Define Crystal Defects | One period |
|  | State different types of crystal defects | One period |
|  | Draw the following structure of : i. NaCl ii. CsCI iii. Spinel iv. Clay. v. Silicate structure | Three period |
|  | Define solid solution. | One period |
|  | Explain Different types of solid solution. | One period |
|  | Diffusion | One period |
|  | Fick’s law of Diffusion  | One period |
|  | Phase Transformation | One period |
|  | Define Nucleation and crystal growth | One period |
|  | State the role of nucleation and grain growth in phase transformation. | One period |
|  | Method of Sintering  | One period |
|  | Factors affecting sintering & vitrification. | One period |
|  | State the effect of temperature on Silica, Zircon, Magnesite and clay | Four period |
|  | Describe the different changes during firing of Silica , Zirconia, kaolin, dolomite, chromite & Graphite etc. | five period |
|  | Pyro chemical changes in triaxial bodies. | One period |
|  | Behavior | One period |
|  | Types  | One period |
|  |  Mechanism | One period |
|  | Ceramic Products showing properties of conductor, semi-conductor, insulator and super conductor  | Two period |
|  | State and explain following properties of ceramic material in brief Mechanical  | One period |
|  | . . Electrical .  | One period |
|  | Chemical  | One period |
|  | . Optical  | One period |
|  | .Thermal  | One period |
|  | .. Nuclear | One period |
|  | . Magnetic | One period |
|  | How Ceramic is different from polymer and metals. | One period |
|  | Define Micro Structure & its characteristics  | One period |
|  |  Various technique of studying microstructure | One period |
|  | Describe different types of Micro scopes like . Mineralogical Micro scope | One period |
|  | Electron Microscope | One period |
|  | Describe the process to prepare a specimen to study microstructure of typical ceramic materials and products . | One period |
|  | Micro Structure of various ceramic white wares and refractories products | One period |
|  | Development of microstructure in relation to sintering and control of microstructure. | One period |

Total 54 periods will be to taken as class one period for internal 5 periods for revision of class