

Material Sc (MM1201) ASSIGNMENT

2020UGME Batch

08th April 2021

Soft copy of the Assigned Chapter in **Doc** to ranjit.met@nitjsr.ac.in by **19th April 2021** and **& in Ppt format** should be mailed by **23rd April 2021**.

Presentation will start from **26th April 2021 serially**.

The subject of the mail should be: Assignment_MM1201_MatSc_2020UGME

The filename of PPT and Doc file should be the (Lowest registration number of the group)_(Title of the assignment),

Marks will be as follows: 1. Content - 10, 2. Way of presentation - 10, 3. Asking Question - 10, 4. Answer - 10, Timing – 10 (Date of submission). These marks will be considered for Teaching Assignment.

Further, each student will submit at least 10 objective questions with their answer through the given Google Form <https://forms.gle/92yA5uFUfZkeXnQr5> by **25th April 2021**.

Gr No	Regn No. 2020UGME-	Topic
1	1, 31, 61, 91	Material Science Introduction: Types of materials from structure to property
2	2, 32, 62, 92	Crystal structure: Crystalline and noncrystalline materials
3	3, 33, 63, 93	Crystal Symmetry- Simple Form, Combination Form, Elements of Crystal- Crystal Faces, Interfacial Angle;
4	4, 34, 64, 94	Laws of Symmetry-Plane of Symmetry, Axis of symmetry, Centre of Symmetry.
5	5, 35, 65, 95	Miller indices,
6	6, 36, 66,	Axial Ratio, Parameters, Indices, Symbols,

7	7, 37, 67, 97	Forms- Holohedral, Hemihedral, Hemimorphic, Enantiomorphous, Fundamental and Open & Closed Forms
8	8, 38, 68, 98	Atomic Packing Factor (A.P.F.) of S.C., B.C.C., F.C.C.; Hexagonal closed packed, Diamond cubic (D.C.) structure
9	9, 39, 69, 99	Crystal Classes and Systems- Isometric (Cubic), Tetragonal,
10	10, 40, 70, 100	Crystal Classes and Systems- Orthorhombic, Monoclinic, Triclinic, Hexagonal and Rhombohedra
11	11, 41, 71, 101	Numerical related to Crystallography
12	12, 42, 72, 102	Bravias lattices, Lattice direction and planes
13	13, 43, 73, 103	Crystal Structure:- Unit Cell and Space Lattice; Lattice Parameter and Crystallographic Planes
14	14, 44, 74, 104	Co-ordination Number, Atomic Radius and Number of Atom per unit cell of S.C., B.C.C., F.C.C.;
15	15, 45, 75, 105	Crystal Imperfections: point, line and planer defect
16	16, 76, 106,	Deformation of material: Recovery re-crystallization and grain growth
17	17, 77, 107	Mechanical properties of materials: Tensile, Impact, Fatigue and Creep of metals

18	18, 48, 78, 108	Electron theory of Metals: Free electron theory, Zone theory
19	19, 49, 79, 109	The dependence of the energies on the wave number, The density of state curves
20	20, 50, 80, 110	Conductors and insulators, Semiconductors
21	21, 51, 81, 111	Dielectric behaviour, Ferro-electricity, Piezoelectricity, Magnetism
22	22, 82, 112	Principles of solidification: Nucleation and growth, Homogeneous and heterogeneous nucleation
23	23, 53, 113	Phase Diagrams: Phase rule
24	24, 54, 84, 114	Isomorphous, eutectic, peritectic, eutectoid and peritectoid transformation
25	25, 55, 85, 115	Fe-cementite diagram
26	26, 56, 86, 116	Heat Treatment of Steel: TTT diagram,
27	27, 57, 87, 117	Different heat treatment process: Annealing, normalizing and Hardening, Hardenability
28	28, 58, 88	Selection of Engineering Materials: Common engineering materials including metals and alloys

29	29, 59, 89	Ceramics composites,
30	30, 60, 90	Polymers
31		Revision
32		Revision
33		Revision
34		Revision
35		Revision

**Mat Sc Syllabus MM1201
2020UGME**

Material Science Introduction: Types of materials from structure to property, Crystal structure: Crystalline and noncrystalline materials, Miller indices, Bravais lattices, Lattice direction and planes. Crystal Imperfections: point, line and planar defect. Deformation of material: Recovery re-crystallization and grain growth, Mechanical properties of materials: Tensile, Impact, Fatigue and Creep of metals. Electron theory of Metals: Free electron theory, Zone theory, The dependence of the energies on the wave number, The density of state curves, Conductors and insulators, Semiconductors, Dielectric behavior, Ferro-electricity, Piezoelectricity, Magnetism, Principles of solidification: Nucleation and growth, Homogeneous and heterogeneous nucleation, Phase Diagrams: Phase rule, isomorphous, eutectic, peritectic, eutectoid and peritectoid transformation, Fe-cementite diagram; Heat Treatment of Steel: TTT diagram, different heat treatment process: Annealing, normalizing and Hardening, Hardenability. Selection of Engineering Materials: Common engineering materials including metals and alloys, ceramics composites, polymers.

Text Book: 1. Materials Science by R.S Khurmi, S. Chand Publication. 2. Materials Science and Engineering by V Raghavan, Eastern Economy Edition PHI publication.

Reference book: 1. Materials Science and Engineering by William Callister, Wiley Publication

Ranjit Prasad/ 8th April 2021