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Syllabus : Classification of engineering materials, Crystal structure, Unit cell and space lattice, Microstructure, types of microscopes, Sample preparation, etching process, types of etchant, Properties of metals Physical Properties, Mechanical Properties, Hardness testing procedure on Brinell and Rockwell tester.

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Concept of phase, pure metal, alloy and solid solutions, Iron Carbon Equilibrium diagram various phases : I) Critical temperatures and significance, II) Reactions on Iron carbon equilibrium diagram, Broad Classification of steels : I) Plain carbon steels: Definition, Types and Properties, Compositions and applications of low, medium and high carbon steels, II) Alloy Steels: Definition and Effects of alloying elements on properties of alloy steels, III) Tool steels: Cold work tool steels. Hot work

tool steels, High speed steels (HSS), IV) Stainless Steels: Types and Applications, V) Spring Steels: Composition and Applications, VI) Specifications of steels and their equivalents, Steels for following: Shafts, axes, Nuts, bolts, Levers, crank shafts, camshafts, Shear blades, agricultural equipments, house hold utensils, machine tool beds, car bodies, Antifriction bearings and gears.

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