

**NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA
DEPARTMENT OF METALLURGICAL & MATERIALS ENGINEERING**

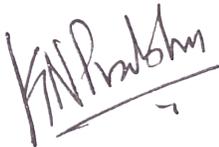
Ph.D./M.Tech. (Research) Selections: 2020-21

Syllabus for the online test

The electronic structure of atoms. Types of atomic and molecular bonds: ionic bonding; covalent bonding; metallic bonding; secondary bonding; mixed bonding; hybridization. Energy bands in metals, insulators and semiconductors. Basics of crystallography. Defects and dislocations. Types of Materials: polymers, metals and alloys, semiconductors, ceramics, composites. Processing of materials. Diffusion. Phase rule and phase diagrams. Properties: optical, magnetic, mechanical, electrical, and thermal. Material degradation and protection.

Ref: W.D. Calister Jr, Materials Science and Engineering: an Introduction, Wiley, 2013, ISBN: 978-1-118-32457-8.

The online test and interview are tentatively scheduled on 9th/10th of September 2020. The exact time and date will be informed to you at the earliest.



H.O.D.

Department of MME