



National Institute of Technology, Rourkela

Department of Industrial Design

Mid Semester Examination 2019-20 (Spring Session)

Subject Code: ID 2202

Max. Marks: 50

Subject: Materials and Processes for Design

Duration: 2hrs.

Instructions:

- i. Answer any TWO of the questions from Part-A
- ii. Answer any SIX of the questions from Part-B
- iii. Write-down the complete answer at single place. Don't split the answer of the same question the multiple places.
- iv. Upload a single pdf file with file name as your roll number.

Part-A		
1.	Describe about the following Inputs to the Design Process for product design with suitable example: i) Concern for the environment ii) Industrial design.	[10]
2.	Give the structural properties of the following materials with neat sketch i. Thermoplastics ii. Thermosetting iii. Elastomers	[10]
3.	Describe the evolution in the use of materials for a given product(s): (i) Camera and (ii) Kettle.	[10]
Part-B		
4.	Mention the role of Science and Technology towards to stimulate new concepts in product design with respect to the new materials and processes.	[5]
5.	Give the complete classification of Engineering Materials	[5]
6.	Represent Crystalline, Polycrystalline and Amorphous structures with neat sketch	[5]
7.	Define unit cell and lattice with suitable diagrams.	[5]
8.	Calculate the number of atoms and atomic radius for a body centered cubic unit cell.	[5]
9.	Which materials could be alloyed to steel in order to enhance the following mechanical properties: i. Strength ii. Hardness	[5]
10.	What is the role of new/innovative technologies in the view of 'Material selection for Design'	[5]
11.	Give the classification of Casting Process.	[5]