K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Subject Code: **1UBSC203**   Subject Name: **Material Chemistry**   Date: 16/12/2022

NOV - DEC - 2022
(B.Tech) Program: FE
Examination: FY Semester: II
Course Code: **1UBSC203**   Course Name: **Material Chemistry**

Duration: 02 Hours   Max. Marks: 45

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

B.Tech._FY_II_1UBSC203_QP_B

		Max. Marks	CO	BT level
Q 1	Solve **any five** questions out of six	**15**		
i)	What are limitations of plain carbon steels?	3M	1	2
ii)	What are ceramics? State their applications.	3M	1	2
iii)	Distinguish between thermoplastics and thermosetting plastic.	3M	1	2
iv)	An alloy of tin and lead contains 75 % tin. Find the mass of eutectic in 1 kg of alloy if the eutectic contains 50 % of tin?	3M	2	3
v)	Nichrome comes under which category of alloy steel? Write applications of Nichrome.	3M	1	2
vi)	Write the classification of composite materials.	3M	1	2
Q.2	Solve **any three** questions out of four.	**15**		
i)	What are the characteristics of biomedical polymers? Write applications of 02 biomedical polymers.	5M	1	2

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ii)	How the dispersion strengthened particle reinforced particle composite material get the strength? Explain with examples.	5M	1	2
iii)	Write the composition, important properties and uses of Duralumin and High Phosporus Bronze.	5M	1	1
iv)	Draw a neat diagram of Pb-Ag system and explain the application of Condensed Phase Rule to it.	5M	2	3
Q.3	Solve **any three** questions out of four.	15		
i)	What is fabrication of plastics? With a neat diagram explain in detail Compression moulding of plastics.	5M	3	2
ii)	Composition of a polymer synthesized is as follows: 50 molecules have molecular weight 2000, 100 molecules are of molecular weight 3500, 300 molecules of molecular weight 5000 and 400 molecules have molecular weight 4000. Calculate the number and weight average of molecular weight and polydispersity index of polymer.	5M	1	2
iii)	What is powder metallurgy? How are metal powders prepared by process of reduction?	5M	3	2
iv)	Give the number of phases and calculate degree of freedom in the following system. (a) Mixture of oxygen and nitrogen. (c) Emulsion of oil and water	5M	2	3

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