

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

May-June 205-26		
(B.Tech) Program: B.Tech Scheme III		
Regular/Supplementary Examination: FY Semester: II		
Course Code: BSC203 and Course Name: Material Chemistry		
Date of Exam: 01/06/2026	Duration: 02 Hours	Max. Marks: 45

Instructions: (1) All questions are compulsory. (2) Draw neat diagrams wherever applicable. (3) Assume suitable data, if necessary.				
		Max. Marks	CO	BT level
Q 1	Solve any 5 questions out of six.	15		
i)	What are smart polymers and where are they used?	3	1	2
ii)	Write composition, properties and uses of Duralumin.	3	1	2
iii)	What are whiskers? What are their special properties?	3	1	1
iv)	1000 g of sample of argentiferous lead containing 0.1% silver is melted and then allowed to cool. If eutectic contains 2.7% of silver, what mass of (i) mass of eutectic will be formed and (ii) mass of lead will separate out?	3	2	2
v)	What is powder metallurgy? Draw diagram of hot isostatic pressing method of compaction.	3	3	2
vi)	Which molecules are IR active molecules? Explain with examples.	3	4	2
Q.2	Solve any three questions out of four.	15		
i)	Calculate the number average and weight average molecular masses of polyvinyl chloride polymer with following composition: $[-CH_2-CHCl-]_{15\%}$ is 30% ; $[-CH_2-CHCl-]_{30\%}$ is 20% ; $[-CH_2-CHCl-]_{50\%}$ is 50% ;	5	1	2

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	Given that atomic mass of C=12, Cl=35.5, H=1			
ii)	What are large particle reinforced composite materials? Outline their properties with examples.	5	1	2
iii)	What is fabrication of plastics? With a neat diagram explain in detail compression moulding of plastics.	5	3	2
iv)	What are the applications of NMR spectroscopy?	5	4	3
Q.3	Solve any three questions out of four.	15		
i)	What are the effects of Ni, Co, Si, V and W in alloy steel?	5	1	2
ii)	How the fiber reinforced composite materials are processed by the filament winding process? Explain with the help of a neat diagram.	5	3	2
iii)	Apply the condensed phase rule in one component system Water.	5	2	3
iv)	Predict the high resolution spectra of $\text{CH}_2\text{Cl}-\text{CH}_2\text{Br}$ and $\text{CH}_3-\text{CO}-\text{CH}_3$	5	4	2
