

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

May-June 20 25 / Nov-Dec 20 25 / July-Aug 20 25 / Feb-March 20 25  
(B.Tech / M.Tech.) Program: B.Tech Scheme I/II/IIB/III: III  
Regular/Supplementary Examination: FY Semester: II  
Course Code: BSC203 and Course Name: Material Chemistry  
Date of Exam: 06/06/2025 02/08/25 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 the characteristics of bio medical polymers?	3	1	2
ii)	Write composition, properties and uses of Magnalium.	3	1	2
iii)	Write a note on dispersion strengthened particle reinforced composite materials.	3	1	1
iv)	Calculate the degree of freedom in the following system. (a) Water in a beaker (b) Ice and vapor	3	2	2
v)	What is powder metallurgy? Draw the diagram of cold pressing method of compaction	3	3	2
vi)	Draw the low and high resolution spectra of 1, 2 dichloro propane.	3	4	2
Q.2	Solve any three questions out of four.	15		
i)	Calculate weight and number average molecular weight of the polymer .120 molecules have molecular mass 2440, 130 molecules have molecular mass 3100, 140 molecules have molecular mass 3200, 160 molecules have molecular mass 3800 and 170 molecules have molecular mass 3900.	5	1	2
ii)	What are shape memory alloys and what are their applications?	5	1	2
iii)	What is fabrication of plastics? Explain the transfer moulding with	5	3	2

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	the help of neat labeled diagram.			
iv)	What is the principle of NMR spectroscopy? Write 02 applications of NMR spectroscopy.	5	4	3
Q.3	Solve any three questions out of four.	15		
i)	What is corrosion resistant steel? Write its types with composition, properties and uses.	5	1	2
ii)	How the fiber reinforced composite materials are processed by pultrusion process? Explain with a diagram.	5	3	2
iii)	Apply the condensed phase rule in two component system Pb-Ag.	5	2	3
iv)	Describe instrumentation of IR spectroscopy with flow chart diagram.	5	4	2

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