BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE **SEMESTER:VI/ADD**
BRANCH: CHEM. ENGG. PLASTICS & POLYMER **SESSION : SP/2019**

SUBJECT: PC6003-ELASTOMER TECHNOLOGY

TIME: 1.5 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1	(a)	What are the molecular-structural requirements for a material to act as a rubber?	[2]
	(b)	Discuss the basic principles used in compounding of rubber. List the various ingredients used in rubber compounding.	[3]
Q2	(a)	What is mastication of rubbers? How is it carried out?	[2]
	(b)	How Carbon black can be classified based on its characteristics?	[3]
Q3	(a)	Why degradation by ozonation in natural rubber compound is frequent?	[2]
	(b)	What do you mean by non-sulfur vulcanization? Give example with reaction mechanism.	[3]
Q4	(a)	What is meant by the term "accelerator" as related to elastomer technology?	[2]
	(b)	In brief describe the role played by an accelerator system in this area.	[3]
Q5	(a)	What are the roles of sulphur vulcanization?	[2]
	(b)	Discuss the factors affecting the process of vulcanization. State various techniques of vulcanization.	[3]
Q6	(a)	Draw and explain the rheometer cure curve. Explain its significance.	[2]
	(b)	Describe the functioning of a "two-roll open rubber mixing mill". In this context mention nip-gap, friction-ratio, and other important parameters, emphasizing on the relevance of each of these.	[3]

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