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

CLASS: BE **SEMESTER : VI/ADD**
BRANCH: CHEMICAL ENGINEERING- PLASTICS AND POLYMER **SESSION : SP/19**

SUBJECT: PC6003 ELASTOMER TECHNOLOGY

TIME: 3 Hours **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What is meant by the term Latex rubber?	[2]
Q.1(b)	In typical natural rubber latex state the approximate composition of the materials which are to be found.	[4]
Q.1(c)	How is natural rubber latex tapped from the rubber tree? After the collection what other important steps are methodically followed to coagulate the latex?	[6]
Q.2(a)	On which basis are the commercially available CRs (Chloroprene rubber) graded? Name the system of grading.	[2]
Q.2(b)	Discuss on "OZONE CRACKING" of CRs and compare this phenomenon with other general purpose rubbers.	[4]
Q.2(c)	What is that outstanding property of chloroprene rubber for which it finds widespread application? Discuss the enhancement of such property when subjected to rigorous adverse conditions	[6]
Q.3(a)	Write down the length is to diameter ratio of a laboratory size rubber mixing mill.	[2]
Q.3(b)	Discuss the function of internal mixing mill in the rubber compounding.	[4]
Q.3(c)	What is the function of oscillating disc rheometer? Discuss on the basis of rubber curing.	[6]
Q.4(a)	Why are V-Belts termed "endless"? Draw a cross-sectional view of a V-Belt and label all the parts.	[2]
Q.4(b)	In brief, discuss the manufacturing technique of a V-Belt.	[4]
Q.4(c)	What are the different sections of conveyer belt? Explain each section with its design aspect.	[6]
Q.5(a)	What is the role of accelerator in rubber curing?	[2]
Q.5(b)	Classify accelerator on the basis of cure rate.	[4]
Q.5(c)	How carbon black can be classify on the basis of its particle size and functions?	[6]
Q.6(a)	What primary functions of radial tyre?	[2]
Q.6(b)	How tyre tread design varies on the basis of applications?	[4]
Q.6(c)	Distinguish radial and bias tyre on the basis of constructions.	[6]
Q.7	Case Study: Develop a tyre tread component for heavy duty vehicle. Study should be based on i) formulation of compounding recipe with proper justification ii) Selection of compounding machinery and conditions iii) Final processing and curing conditions.	[12]

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