

*This question paper contains 3 printed pages.*

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Your Roll No. ....

M. E.

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POLYMER TECHNOLOGY

Paper— CH.551

(Tyre Technology)

Time : 3 hours

Maximum Marks : 100

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Attempt any five questions.  
All questions carry equal marks.*

1. (a) Explain the functions and desirable properties of pneumatic tyres. 10
- (b) Define Aspect Ratio. With the help of neat sketches show tyre's profile (i) unloaded, and (ii) loaded, indicating overall tyre diameter, nominal rim diameter, section width, section height and percent tyre deflection. 10
2. (a) Discuss various tyre sizing methods with suitable examples. 10
- (b) How are tyres categorised? Explain the fact that tyre is a well engineered polymer product. 10

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3. (a) Explain the various factors to be taken into consideration for the efficient design of carcass of a pneumatic tyre. 10
- (b) Describe the various steps involved in the manufacture and processing of tyre cords. 10
4. What do you understand by the principle of rubber compounding in the design and manufacture of important components of pneumatic tyres? Give the names of various ingredients used in the compounds along with their respective roles and functions. 20
5. (a) Compare and contrast the principle and working of a two roll mill *versus* banbury mixer. 10
- (b) Explain the phenomenon of heat build up in pneumatic tyres. What is the effect of heat build up on nylon car tyres? 10
6. With the help of a schematic diagram, discuss the various steps involved during the manufacture of pneumatic tyres with special emphasis on pre-cure and post-cure operations. 20
7. (a) How is tyre retreading an economic and environment friendly technique of tyre recycling? Explain. 10
- (b) Describe the alternative methods for recycling old waste tyres. 10

8. Write short notes on any *four* of the following:

- (a) Underinflation *versus* overinflation
- (b) Evolution of pneumatic tyres
- (c) Different types of calenders
- (d) Hydroplaning car tyres *versus* bicycle tyres
- (e) Rolling resistance.

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