This question paper contains 3 printed pages.

3147 *Your Roll No.* _____

M.E.

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.)

Answer any five questions.
All questions carry equal marks.

1. (*a*) How are pneumatic tyres categorised? Explain the fact that tyre is a well engineered polymer product. **10**

   (*b*) Give a brief account of the important developments in the evolution of pneumatic tyres to its present state. **10**

2. (*a*) Discuss the various factors which determine the tyre size and type. Describe the method of accounting approximate area and shape of tyre's footprint area. **10**

   (*b*) Discuss various tread pattern types listing their advantages and disadvantages. **10**

P. T. O.

3. Explain with the help of neat sketches the structure of Bias, Bias belted and Radial tyres along with their relative merits and demerits. 20

4. (*a*) Discuss the basis of classification of calendars. With the help of sketches describe the process of coating both sides of fabric with rubber for making carcass plies. 10

   (*b*) Define Aspect Ratio. With the help of neat sketches show tyre's profile indicating overall tyre diameter, nominal rim diameter, section width, section height and percent tyre deflection for loaded tyre. 10

5. Explain any *four* of the following:

   (*i*) Heat build up and flat spotting

   (*ii*) Hydroplaning

   (*iii*) Tyre wear

   (*iv*) Function of adhesion in tyre construction

   (*v*) Role of textiles in pneumatic tyre. 5×4

6. With the help of a schematic flow diagram explain the various steps involved during the tyre cord manufacturing process. 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:

(*i*) Tubeless *versus* Conventional tubed tyres

(*ii*) Tyre Building

(*iii*) Tyre noise source mechanisms

(*iv*) Bead design

(*v*) Rolling resistance. 5×4