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**B. Tech. Degree V Semester Examination in Polymer Science and Engineering November 2015**

**PE 1504 RUBBER PROCESSING AND PRODUCTS MANUFACTURE**

Time: 3 Hours

Maximum Marks: 50

**PART A**(Answer *ALL* questions)

(10 × 2 = 20)

- I. (a) How is masterbatch different from a compound? What are the advantages of masterbatching?  
 (b) What are the differences between friction coating and spreading?  
 (c) What is mould shrinkage? What are the factors contributing to mould shrinkage?  
 (d) How does rubber price fluctuation affect the rubber product manufacturing industry and the plantation industry?  
 (e) What are the advantages of Mono band building?  
 (f) What are the disadvantages of Ram extruder?  
 (g) What is profile calendaring?  
 (h) What are the methods used for metal surface cleaning?  
 (i) Which are the commonly used blowing agents? How can you differentiate between closed and open cell structure?  
 (j) Which polymers are commonly used in antivibration mountings? What are the requirements for a polymer to be used in mountings?

**PART B**

(4 × 7½ = 30)

- II. (a) Explain briefly the process of mixing in an internal mixer. (4)  
 (b) How is temperature of mixing and quality of dispersion related? (2)  
 (c) What is meant by heat treatment? (1½)

**OR**

- III. (a) Explain briefly the process of spreading. (4)  
 (b) Compare rubber solution and latex compound for spreading process. (2½)  
 (c) What are the applications of rubber coated fabric? (1)

- IV. (a) Explain briefly the compression moulding process for the production of rubber gasket. (5)  
 (b) What are the factors to be considered while designing a compound for compression moulding? (2½)

**OR**

- V. (a) Explain briefly autoclave curing for the production of rubber tubing. (5)  
 (b) Compare hot air curing and fluidized bed curing. (2½)

- VI. (a) What are the principles of reinforcement? (2½)  
(b) What is the effect of particle size, structure, physical and chemical nature and porosity on reinforcement? (5)

**OR**

- VII. (a) Discuss briefly the manufacture of cycle tyre and tube. (5)  
(b) Design suitable formulations for cycle tyre and tube. (2½)

- VIII. What are the different components of a sand blasting hose?  
Design a suitable formulation for the inner liner and outer cover for a hose to be used in petrol pump. (7½)

**OR**

- IX. Explain briefly the process of tank lining.  
Design suitable formulations for lining tanks to be used for storing dilute hydrochloric acid and concentrated sulphuric acid. Justify your formulations. (7½)

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