

This question paper contains 3 printed pages]

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S. No. of Question Paper : 1617

Unique Paper Code : 1141303

F-3

Name of the Paper : Polymer Additives

Name of the Course : B.Tech. (Polymer Science)

Semester : III

Duration : 3 Hours

Maximum Marks : 75

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

Attempt Five questions in all.

Question No. 1 is compulsory.

Draw neat and labelled diagram wherever necessary.

1. (a) Describe blooming phenomena of additive in polymer.
- (b) Reversible crosslinking agents.
- (c) Solid layer lubricants.
- (d) Write down short note on light screen.
- (e) Describe the effect of filler and impact modifiers in polycarbonate.
- (f) What will be the effect of plasticizer on the solid state properties of the plastics ? Give two examples of primary plasticizer.

P.T.O.

- (g) Why are tackifiers required in Rubber processing ?
- (h) Non-accelerated sulphur vulcanization binds two allylic positions of unsaturated rubber. Justify.
- (i) Discuss marching and reversion in oscillating disc rheometer curve. $9 \times 3 = 27$
2. Give formulations for the following products based on PVC : $6 + 6 = 12$
- (a) High temperature cable insulation
- (b) Fruit juice container.
3. (a) Explain auto synergism mechanism. 4
- (b) Describe mica as reinforcing filler in plastic technology. 4
- (c) Discuss the application of blowing agents in plastics. 4
4. (a) What are the flame retardants ? Describe its mechanism of functioning. 6
- (b) Describe polymeric flow promoters for PVC in detail. 6
5. (a) Why are the crosslinking agents used in polymers ? Describe the different types of cross-linking agents. 8
- (b) Why are stabilizers important for PVC ? 4
6. (a) Explain with examples how the surface properties of the rubber are modified. 8
- (b) Reversion. 4

7. (a) Describe the function of additives in plastics :

(i) p-toluene sulfonyl semicarbazide

(ii) Non-particulate radiations

(iii) Tetrabromobisphenol A.

(b) What is uv-quenching ? Explain its significance in brief.

(c) Explain the use of phosphate and trimellitates plasticizers in Thermoplastics.

(d) Discuss the use of POSS molecules and TiO_2 as fillers.

4×3=12