

Sl. No.	:	6148	F-5
Unique Paper Code	:	1141303	
Name of the Paper	:	Polymer Additives	
Name of the Course	:	B.Tech(Polymer Science)	
Semester	:	IIIrd	
Duration	:	3 Hours	
Maximum Marks	:	75 Marks.	

Instruction for candidates

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

Attempt five questions in all.

Question No. 1 is compulsory. Draw neat and labeled diagram wherever necessary.

Q1

- a) Compare blooming and bleeding phenomena of the additive in polymer.
- b) Write note on active site generators mechanism in USP (unsaturated polyester)
- c) Explain role of in activators for rubber compounding
- d) Write down the use of boundary layer lubricants with examples
- e) What are the changes that occur in the rubber after vulcanization?
- f) Explain the mechanism of MBT as accelerators?
- g) Write down the mechanism of oxidation of hydrocarbon polymer
- h) What kind of additive will be mixed to make a polymer for cushioning application? Details in brief.
- i) State whether peroxide vulcanization is possible for all rubbers or not? Explain. (9x3)

Q2 Give formulations and compounding process for the following products based on PVC

- a) Transparent calendaring compounds
- b) Hand bags (6+6)

Q3a) What is plasticisers ? Give different primary plasticizer used plastics.

- c) Write the mechanism of halogen based flame retardants
- a) Describe the effect of impact modifier in Polypropylene., (4+4+4)

Q4a) List the advantageous properties of glass fibres and the effected on polymer as the reinforcements.

- b) Explain the different types of organic pigments used in polymer processing.
- c) Discuss conventional vulcanization and efficient vulcanization. (4+4+4)

Q5a) What is Synergism? Discuss an example of synergism in plastics.

b) Define Blowing agent. Describe the role of hydrazine and its derivative as chemical blowing agents.

(6+6)

Q 6a) What is tackifying agent? Describe a method for evaluation of tackiness.

b. Discuss the measuring methods of oxygen index (6+6)

Q7 a) Illustrate the function of the following additives in plastics

I. Carbon black.

II. Zinc dialkyl dithiophosphates

III. Zinc Oxide

b) What are heat stabilizers and explain the use of basic lead sulphate as stabiliser?

c) Write the differences between radical scavengers and quenchers

d) What is Sulphur bloom and what are its effects? How it can be reduced?

(4x3)