

• **Q-1. Write the following**

- (i) Explain black and non-black fillers for rubber. (07 Marks)
(ii) What is Nano composite? Give advantages and disadvantages of Nano composite. (07 Marks)

OR

- (i) Describe the role of activator and accelerator in rubber compounding. (07 Marks)
(ii) Give short note on: uses of cross-linking agents and reclaimed rubber in rubber compounding. (07 Marks)

• **Q-2. Write the following**

- (i) What are Antioxidants? Give mechanism of action. (07 Marks)
(ii) List various Flame Retardants used. Explain their mechanism. (07 Marks)

OR

- (i) What is the importance of Heat Stabilizers? Explain its working on PVC material. (07 Marks)
(ii) Write short notes on:
(1) Plasticizers (2) Impact Modifiers for Polymer (07 Marks)

Q.3. Write the following

1. Explain constructional features and working of Ribbon Blenders. (07 Marks)
2. Explain construction and working of Counter Rotating Twin Screw Extruder. (07 Marks)

OR

1. Explain constructional and working of Banbury with a neat sketch. (07 Marks)
2. Explain the mechanisms used to achieve mixing in Two Roll Mill. (07 Marks)

• **Q.4. Write the following**

- (i) Explain the various steps involved in compounding process of plastics by Banbury Mixer. (07 Marks)
(ii) With the help of a neat diagram, explain the working and principle of a Twin Screw Extruder used for compounding. (07 Marks)

OR

- (i) Explain steps involved in PVC compounding in detail. (07 Marks)
(ii) Describe principle and function of Two Roll Mill with diagram. (07 Marks)

• Q.5. Attempt any seven out of Twelve

1. By which instrument can you check the rheology property of polymer?
2. For what application is High-Speed Mixer used?
3. Give difference between SPVC and RPVC for water supply lines.
4. Explain LOI for polymer.
5. Enlist the auxiliary machines used in plastic industries.
6. How to prevent acceleration of degradation during high temperature use?
7. When fillers and pigments are blended into plastic, how do they affect weather ability?
8. How does temperature affect plastics during their use?
9. Why does "yellowing in the dark" occur in ABS?
10. What are blooming and bleeding?
11. What is fogging?
12. Conventional silicone oils have been used in polymer processing as lubricant — justify.

