

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3172316****Date:19-12-2023****Subject Name: Plastic Additives, Compounding and Blends****Time: 10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

|            |                                                                                                              | MARKS     |
|------------|--------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.1</b> | (a) Define Additive, compounding and Blend                                                                   | <b>03</b> |
|            | (b) Write short notes on reinforcement and blowing agents                                                    | <b>04</b> |
|            | (c) Give the detail classification of additives with suitable example.                                       | <b>07</b> |
| <b>Q.2</b> | (a) Define Anti slip agent and give two examples.                                                            | <b>03</b> |
|            | (b) Discuss the various type of UV stabilizer.                                                               | <b>04</b> |
|            | (c) Define flame retardants? Explain the mechanism of functioning of flame retardants with suitable example. | <b>07</b> |
|            | <b>OR</b>                                                                                                    |           |
|            | (c) Discuss the Dispersive and distributive mixing and Mixing Equipments..                                   | <b>07</b> |
| <b>Q.3</b> | (a) Define Impact modifier and write their example.                                                          | <b>03</b> |
|            | (b) Explain with suitable example- (a) mold releasing agent (b) antistatic agent.                            | <b>04</b> |
|            | (c) Explain the principal and application of differential scanning Calorimetry (DSC)                         | <b>07</b> |
|            | <b>OR</b>                                                                                                    |           |
| <b>Q.3</b> | (a) Write role of Mould releasing agents with suitable example                                               | <b>03</b> |
|            | (b) Write short notes on developments in compounding technology.                                             | <b>04</b> |
|            | (c) Discuss the Principles, Process control systems and working details of Batch mixers.                     | <b>07</b> |
| <b>Q.4</b> | (a) Write the application Ribbon blender.                                                                    | <b>03</b> |
|            | (b) Write short notes Planetary mixers.                                                                      | <b>04</b> |
|            | (c) Give the Principle and operating details of the two roll mill.                                           | <b>07</b> |
|            | <b>OR</b>                                                                                                    |           |
| <b>Q.4</b> | (a) Give the importance of High speed mixer .                                                                | <b>03</b> |
|            | (b) Explain Internal mixers with suitable diagram                                                            | <b>04</b> |
|            | (c) Write the Principle and operating details of the single screw and multiple screw mixer.                  | <b>07</b> |
| <b>Q.5</b> | (a) Define the Compatibilization.                                                                            | <b>03</b> |
|            | (b) Explain the steps in blending.                                                                           | <b>04</b> |
|            | (c) Discuss the principle and application of Fourier transformed FTIR                                        | <b>07</b> |
|            | <b>OR</b>                                                                                                    |           |
| <b>Q.5</b> | (a) Define the alloys and blends.                                                                            | <b>03</b> |
|            | (b) Write the properties and application of PVC/SAN and PC/ABS blends.                                       | <b>04</b> |
|            | (c) Explain the principle and application of Scanning electron microscope (SEM).                             | <b>07</b> |