

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022

Subject Code:3150505

Date:11-01-2023

Subject Name:Particle and Fluid Particle Processing

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.**

- Q.1 (a)** Prove that sphericity of sphere is 1 and Define Arithmetic Mean Diameter. **03**
(b) Define Mesh Number and Volume Mean Diameter. **04**
(c) Describe types of fluidization in detail. **07**

- Q.2 (a)** Give classification of various types of impellers used for mixing and agitation of liquid. **03**
(b) Write short note on storage devices of solids. **04**
(c) Describe construction and working of mixer used for non-cohesive solid. **07**

OR

- (c)** Describe construction and working of belt conveying system. **07**

- Q.3 (a)** Define Magma and Invariant crystal **03**
(b) List out basic requirement for the septum in any industrial filtration. **04**
(c) Explain Kynch theory for design of continuous thickener. **07**

OR

- Q.3 (a)** Give two purposes of screen analysis. **03**
(b) Outline the various purpose of agitation of liquids in chemical engineering. **04**
(c) Explain the scale up of the agitated vessel. **07**

- Q.4 (a)** Outline various purpose of agitation of liquids in chemical industries. **03**
(b) List out basic requirement of septum in chemical industries? **04**
(c) Write short note on Freeze drying. **07**

OR

- Q.4 (a)** Differentiate between filter aids and filter medium? **03**
(b) Explain the condition of fluidization with neat sketch? **04**
(c) Describe construction and working of hydro cyclones. **07**

- Q.5 (a)** Define Froude number and give its significance. **03**
(b) What are purposes of draft tube in agitated vessel? **04**

(c) Explain working of tray dryer for solids with neat sketch. **07**

OR

Q.5 (a) Write brief not on homogeneous nucleation. **03**

(b) Explain sink and float method. **04**

(c) Discuss construction and working of helical element static mixture. **07**
