

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (New) EXAMINATION – WINTER 2015

Subject Code: 2143608

Date: 28/12/2015

Subject Name: Mechanical Operations in Chemical Process Industries

Time: 2:30pm to 5:00pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q-1 (a) Write note on attrition mill, giving outline-sketch 07
(b) Define critical speed of the ball mill. Explain in detail the construction and working of the Ball mill with neat figure and the industrial application. 07
- Q-2 (a) Name various laws for crushing and discuss and derive any one. 07
(b) List different types of industrial conveyers and explain any one in detail. 07

OR

- (b) Define filtration. Explain principle, construction and working of Rotary Drum filter. 07
- Q-3 (a) Discuss capacity and effectiveness of screens. 07
(b) State the difference between agitation and mixing and also list out various application for both. 07

OR

- Q-3 (a) Define : 1) Angle of nip 2) Centrifuging 3) Constant rate filtration 4) Sauter Mean diameter 5) Mechanical operation 6) Constant pressure filtration 7) Sedimentation 07
(b) Describe continuous gravity thickener with neat sketch. 07
- Q-4 (a) Explain construction and working of Jaw crusher with a neat sketch 07
(b) What is swirling and what is its effect on liquid mixing. What are the various ways of prevention of swirling? 07

OR

- Q-4 (a) Define crushing efficiency and justify why crushing efficiencies are low. 07
(b) Explain the difference between crushing and grinding. 07
- Q-5 (a) Discuss screen analysis in detail. 07
(b) Discuss the construction and working of a cyclone separator. 07

OR

- Q-5 (a) Explain the fluidization process and its applications in chemical industry. 07
(b) Describe the different mixing equipments used for solid mixing in brief. 07
