Seat	No.:	Enrolment No	
	Di	GUJARAT TECHNOLOGICAL UNIVERSITY ploma Engineering - SEMESTER-III • EXAMINATION – WINTER 2013	
Subject Code: 3330502		Code: 3330502 Date: 28-11-2013	
Sub Tim	ject ie: 02	Name: Mechanical Operation 2:30 pm - 05:00 pm Total Marks: 70	
Instr	2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a) (b)	Define Unit Operation and its features. Explain any one unit operation in detail. Explain three laws of size reduction.	07 07
Q.2	(a) (b)	Calculate operating speed of ball mill from following data:  Diameter of ball mill = 600mm  Diameter of ball = 50mm  Operating speed = 60% of critical speed of ball mill.  Derive formula for overall effectiveness of screen.	07 07
	(b)	OR Derive equation for angle of nip in roll crusher.	07
Q.3	(a) (b)	Derive equation of critical speed in ball mill.  Explain vibrating screen with neat sketch.  OR	07 07
Q.3	(a) (b)	Classify principle types of size reduction machines. Explain Rake Classifiers with neat sketch	07 07
Q.4	(a) (b)	Explain laboratory batch sedimentation Test. Explain: Constant rate filtration and constant pressure filtration.  OR	07 07
Q. 4	(a) (b)	Explain Dorr Thickener. Write construction and working of Plate and frame filter press with sketch.	07 07

\*\*\*\*\*\*

OR

**07** 

**07** 

**07** 

**07** 

Explain Filter media and its characteristics.

Explain: Agitation vessel with sketch.

Describe Swirling and vortex formation.

Classify Impellers and explain propeller in brief.

Q.5

Q.5

(a)

(b)

(a)