Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous), Rajkot

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER - 2017

M. Sc. Industrial Chemistry

16PICCC11 - MECHANICAL OPERATIONS

Duration of Exam – 3 hrs   *Semester – III*   *Max. Marks – 70*

Part A *(5X2= 10 marks)*
Answer **ALL** questions

1.   Define the term force. Give its unit.

2.   Write a note on reduction ratio.

3.   Define: i) Undersize   ii) Oversize

4.   What do you mean by cut size?

5.   Write a note on free settling.

Part B *(5X5 = 25 marks)*
Answer **ALL** questions

6a.   Define: Shear Stress, Ductility, Malleability, Specific Weight, Specific Volume.
OR
6b.   Define: Elasticity, Plasticity, Tensile Strength, Compressive Strength, Shear Strain.

7a.   Certain crusher accepts a feed material having a volume-surface mean diameter of 19mm and gives a product of volume-surface mean diameter of 5mm. The power required to crush 15 tons per hour is 7.5 kW. What will be the power consumption if the capacity is reduced to 12 tons per hour. Use Rittingers law for crushing.
OR
7b.   Find out the critical speed of the ball mill by using following data:
Diameter of ball mill = 450mm.
Diameter of ball = 25mm.

8a.   Explain US standard screen with example.
OR
8b.   Explain Differential analysis with the help of example and graph.

9a.   Explain open circuit grinding.
OR
9b.   Write a note on protected and unprotected piles.

10a.   Explain gravity settling tank with a neat diagram.
OR
10b.   Write a detailed note on scrubbers with a diagram.

11a. Enlist and explain laws of crushing and grinding.

OR

11b. What do you mean by crushing efficiency and mechanical efficiency? Give its mathematical relation.

12a. Give Principle, Construction and Working of Jaw Crusher.

OR

12b. Give Principle, Construction and Working of Roll Crusher.

13a. Give diagram, construction and working of Grizzlies.

OR

13b. Explain material balance over a screen.

14a. Write a note on bin storage and silo storage.

OR

14b. Give construction of grade efficiency curve.

15a. Explain construction and working of Hydraulic Jig with a neat diagram.

OR

15b. Give principle, construction and working of electrostatic separation.

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