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Roll No

CM-404 (GS)

B.E. IV Semester Examination, June 2020

Grading System (GS)

Fluid Particle Mechanics

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is Choke crushing?
b) Explain the factors influencing the size of the product in the ball mill.
2. Describe the construction and working of a gyratory crusher with a neat sketch.
3. Define mixing Index, degree of mixing and rate of mixing. What is the meaning of mixing Index at zero time?
4. It is required to crush. 300 tons/hr of an arc which may be classified as safe material. The range of feed size is such that 80% of the feed passes through an opening of 16 inch. The product size range is to be such that 80% of the product passes through an opening of 3 inches. What type of crusher may be used? Estimate the power consumption per ton of feed.
5. Explain pneumatic conveying system with their applications.
6. We're using a screw conveyor to move a fine, dusty material from one part of our plant to another, but the material runs out of the conveyor just like water. What can we do?

OR

- a) List the type of impellers used for suspending solids in liquids.
 - b) Estimate the power required for a propeller mixer of propeller diameter 30cm. The liquid being mixed has a density of 1.75g/cc and viscosity is 1.6 cP, at the operating $NRe=29,000$, given the value of power group is 0.22.
7. How do we define particle size?

OR

Define the Volume-surface diameter D_{SV} (Sauter diameter) and Stokes diameter D_S .

8. Classify mixers for free flowing solids based on their mode of operation.

OR

For a liquid mixer in which a propeller stirrer, 0.3 m in diameter, is rotating at 300 rev./min. in water estimate the power required to operate the Stirrer. The tank is 0.6 m in diameter.
