

Printed Pages : 3



ECH-305/ECH-307

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 151307**

Roll No.

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**B. Tech.**(SEM. III) (ODD SEM.) THEORY  
EXAMINATION, 2014-15**FLUID FLOW & SOLID HANDLING**

Time : 2 Hours]

[Total Marks : 50

**Note :** Attempt ALL questions. Assume missing data if any**1** Answer any TWO parts : **7×2=14**

- (a) Classify screening equipment and discuss any one with neat sketch. Define sphericity for spherical and non-spherical particles.
- (b) Classify the size reduction equipment and discuss the principles of size reduction involved in each type of equipment. With the help of a neat sketch, discuss the Ball mill.
- (c) A pair of rolls is to take a feed equivalent to spheres of 3 cm in diameter and crush them to spheres having 1 cm diameter. If the coefficient of friction is 0.29, what would be the diameter of rolls?

**2** Answer any TWO Parts : **6×2=12**

- (a) In a mixture of quartz (sp.gr = 2.65) and galena (sp.gr = 7.5), the size of the particles range from 0.0002 cm to 0.001 cm. On separation in a hydraulic classifier using water under free settling conditions, what are the size ranges of quartz and galena in the pure products? (Viscosity of water = 0.001 kg/m.s; density = 1000 kg/m<sup>3</sup>).
- (b) Explain the working of a vacuum drum filter with a neat sketch and specify the fields of application.
- (c) Write three laws for predicting the energy requirement associated with particle size reduction. Explain the working of Jaw crushers.

**3** Answer any TWO parts : **6×2=12**

- (a) Classify fluid and Define hydrostatic equilibrium. Express mathematically the condition of hydrostatic equilibrium.
- (b) The pressures at two sections of a horizontal pipe are 0.3 kgf/cm<sup>2</sup> and 0.6 kgf/cm<sup>2</sup> and the diameters are 7.5 cm, and 15 cm respectively. Determine the direction of flow if water flows at a rate of 8.5 kg/sec. State your assumptions.
- (c) Show that the average velocity of the fluid flowing through a circular pipe under laminar conditions is half that of the maximum velocity.

4 Answer any TWO parts : **6×2=12**

- (a) Compare between centrifugal and reciprocating pumps and Write briefly the characteristic features and applications of fans, blowers and compressors.
  - (b) Explain the principle, construction and working of a venturi meter with the help of a neat sketch.
  - (c) With a neat sketch explain the process of fluidization. State any two applications.
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