

# Unit 13 - Week 11

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## Assignment 11

The due date for submitting this assignment has passed. **Due on 2019-10-16, 23:59 IST.**  
 As per our records you have not submitted this assignment.

- 1) With a given fine particle size, homogeneous suspension usually results from \_\_\_\_\_.
- higher solids concentration
  - lower solids concentration
- a.  
 b.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 2) Mixture density of a slurry, in terms of the volume fraction of the solids ( $C_v$ ), is given by:
- $\rho_m = C_v \rho_f + (1 - C_v) \rho_s$
  - $\rho_m = C_v \rho_s + (1 - C_v) \rho_f$
  - $\rho_m = C_v \rho_f - (1 - C_v) \rho_s$
  - $\rho_m = C_v \rho_s - (1 - C_v) \rho_f$
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b.
- 3) Which of the following statements is correct?
- Sludge is highly concentrated slurry of coarse particulate material
  - Sludge is low concentrated slurry of fine particulate material
  - Sludge is highly concentrated slurry of fine particulate material
  - Sludge is low concentrated slurry of coarse particulate material
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 4) In heterogeneous flow condition, solid particles have significant influence on the flow properties.
- True
  - False
- a.  
 b.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b.
- 5) Friction head loss ( $h_f$ ) in a horizontal pipe is related to Fanning friction factor ( $f_f$ ) by:
- $h_f = 2f_f \left(\frac{L}{D}\right) \frac{V_{sl}^2}{g}$
  - $h_f = 2f_f \left(\frac{L}{D}\right) \frac{V_{sl}^2}{g}$
  - $h_f = 2f_f \left(\frac{L}{D}\right) \frac{V_{sl}^2}{2g}$
  - $h_f = 2f_f \left(\frac{L}{D}\right) \frac{V_{sl}^2}{4g}$
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 6) The effective viscosity, in power-law fluids, can be expressed as:
- $\mu_e = \frac{\tau_0}{g} \left(\frac{16V_{sl}}{D}\right)$
  - $\mu_e = \frac{\tau_0}{g} \left(\frac{4V_{sl}}{D}\right)$
  - $\mu_e = \frac{\tau_0}{g} \left(\frac{8V_{sl}}{D}\right)$
  - $\mu_e = \frac{\tau_0}{g} \left(\frac{2V_{sl}}{D}\right)$
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 d.
- 7) For laminar flow, Fanning friction factor is related to generalized Reynolds number ( $Re^*$ ) by:
- $f_f = \frac{16}{Re^*}$
  - $f_f = \frac{24}{Re^*}$
  - $f_f = \frac{32}{Re^*}$
  - $f_f = \frac{64}{Re^*}$
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 8) Hedstrom number is usually associated with the estimation of pressure drop in horizontal pipe for:
- laminar flow of Bingham slurry
  - laminar flow of power-law slurry
  - turbulent flow of Bingham slurry
  - turbulent flow of power-law slurry
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 9) For heterogeneous slurries, a pipeline should be operated
- at the critical deposition velocity
  - below the critical deposition velocity
  - above the critical deposition velocity
- a.  
 b.  
 c.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 10) Froude number that describes different flow regime in pneumatic transport, is estimated by:
- $\frac{\text{viscous force}}{\text{gravitational force}}$
  - $\frac{\text{inertial force}}{\text{gravitational force}}$
  - $\frac{\text{inertial force}}{\text{drag force}}$
  - $\frac{\text{viscous force}}{\text{pressure force}}$
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b.
- 11) Which of the following statement is correct?
- Efficiency of centrifugal pumps are usually higher than positive displacement pumps
  - Efficiency of centrifugal pumps are usually similar to positive displacement pumps
  - Efficiency of centrifugal pumps are usually lesser than positive displacement pumps
- a.  
 b.  
 c.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 12) Typically, the maximum allowable particle size for slurry transport through positive displacement pumps is around \_\_\_\_\_.
- 2 mm
  - 8 mm
  - 20 mm
  - 150 mm
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 13) Which of the following is not the requirement for dense phase pneumatic transport?
- Low air
  - Lower pressure
  - Low solid velocities
  - None of the above
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b.
- 14) The range of gas velocities in dense phase pneumatic transport?
- > 100 m/s
  - 50 – 100 m/s
  - 10 – 20 m/s
  - 1 – 5 m/s
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 d.
- 15) The range of gas velocities in dilute phase pneumatic transport
- > 20 m/s
  - < 20 m/s
  - < 10 m/s
  - < 5 m/s
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 16) Choking in pneumatic transport can be reached by:
- decreasing the gas velocity at a constant solids flow rate
  - increasing the solids flow rate at a constant gas velocity
  - both of the above
  - none of the above
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 17) For a particular pipe size and solids flow rate
- salutation velocity is always higher than the choking velocity
  - salutation velocity is always lower than the choking velocity
  - salutation velocity is equals to the choking velocity
- a.  
 b.  
 c.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 a.
- 18) As per the industrial practice, bend pressure drop is often approximated as the equivalent to nearly:
- 7.5 m of horizontal section pressure drop
  - 7.5 m of vertical section pressure drop
  - 7.5 m of a 45° inclined section pressure drop
- a.  
 b.  
 c.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 b.
- 19) Dense phase pneumatic transport:
- has low energy requirement
  - may carry abrasive and friable materials
  - both of the above
  - none of the above
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 c.
- 20) The essential condition for applying Einstein's equation to calculate slurry viscosity is:
- uniform particle size
  - spherical particle
  - low solids concentration
  - all of the above
- a.  
 b.  
 c.  
 d.
- No, the answer is incorrect.  
 Score: 0  
 Accepted Answers:  
 d.