1. A bed of granular material consisting of particles having diameter D and density ρ_p is to be fluidized, if the depth of bed is L and bed porosity is p, the pressure drop of a fluid flowing through the bed will be (g is acceleration due to gravity)

a) $D*(\rho_p - \rho)*(l-p)*g$
b) $L*(\rho_p - \rho)*(l-p)*g$
c) $D*\rho_p*p*g$
d) $L*\rho_p*p*g$

Answer: b

2. The sphericity of cylinder with diameter 1 cm and height 1 cm is

a) 0.834
b) 0.874
c) 0.912
d) 0.956

Answer: b

3. If an object has the volume V_p, Diameter D_p and surface area S_p, then the sphericity of that object can be given as

a) $\frac{6*Vp}{Dp*Sp}$
b) $\frac{6*Dp}{Vp*Sp}$
c) $\frac{6*Sp}{Vp*Dp}$
d) None of the above

Answer: a

4. Pressure drop in liquid flow through granular materials is bestestimated by

a) Blake-Kozney equation
b) Burkey - Plummer equation

c) Ergun equation

d) Fourier equation

Answer: c

5. The sphericity of cube with side a?

a) 0.643

b) 0.777

c) 0.806

d) 0.874

Answer: c

6. Ergun's equation is applicable to

a) turbulent flow

b) slit flow

c) porous media flow

d) laminar flow

Answer: c

7. Air is flowing through a bed of grain being dried in a bin dryer. If v' is the superficial velocity (velocity based on empty cross section of the bed) and ε is the porosity, then the actual velocity through void space will be

a) v'/ε

b) v'*ε

c) v'/(1-ε)

d) v’*(1-ε)

Answer: a

8. At a certain stage of fluidization, the height and porosity of a bed of granular material are 5 cm and 0.4 respectively. If the height is increased to 6 cm by increasing air velocity, the porosity of the bed will be

a) 0.30

b) 0.45

c) 0.50

d) 0.60

Answer: c

9. Burker-Plummer equation is valid for Reynold no.

a) less than 10

b) between 10 to 1000

c) greater than 1000

d) None of the above

Answer: c

10. If ε_{mf} is the porosity of the bed at minimum fluidization then the height of the bed at minimum fluidization when there is no porosity can be find out as

a) $L*(1- \varepsilon_{mf})$

b) $L/(1- \varepsilon_{mf})$

c) $L* \varepsilon_{mf}$

d) L/ ε_{mf}

Answer: b