# POROSITY EXERCISE

(a) Calculate the porosity of a formation composed of uniform spherical grains of radius 100 μm in a *cubic* packing arrangement.

(b) What would be the porosity of the formation if it were composed of uniform spherical grains of radius 10 μm in a cubic packing arrangement instead?

(c) Calculate the porosity of a formation composed of uniform spherical grains of radius *r* in a *hexagonal* packing arrangement.

(d) Calculate the porosity of a formation composed of uniform spherical grains of radius *r* in a *tetragonal* packing arrangement.

(e) A new spherical particle requires to be less than a maximum size for it to fit through the pore throat created by the particles in the cubic cell matrix and into the central space. Calculate the porosity of a formation composed of uniform spherical grains of radius *r* in a cubic packing arrangement if a single smaller particle of the maximum possible size squeezes inside the unit cell and stays there without projecting beyond the confines of the unit cell.

(f) Calculate the porosity of a formation composed of uniform spherical grains of radius *r* in a cubic packing arrangement, when the central space is occupied by the largest possible sized spherical particle. Such a particle could not squeeze inside the cell between the other particles, but must have been placed there during initial rock deposition.