

A- Calculate the value of gravity derived from the gravitational force at the sea level at the latitude ( $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ) if the earth radius at the equator is (6378.16 km) and the earth radius at the pole is (6356.78km), and the total earth mass is ( $5.977 * 10^{24}$  kgm) .

Find the vertical gradient of gravity.

B- Calculate the theoretical gravity values using the global equation (I.G.F) at sea level at latitude ( $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ).in the north of the earth.