Explain your answers with neat sketches when applicable. Assume all computations are made on Helmert1906 (a = 6378.2 km, $f = \frac{1}{298.3}$). Also, mean radius of the earth is R = 6371 km.

Assignment (3) – Central Zenithal Projection

1. Mention how central zenithal projection is classified based on the location of center radiation.
2. Why central zenithal projection is also called azimuthal projection?
3. Using only graticules differentiate between different types of central zenithal projection.
4. Find the X and Y coordinates of the three points A (80°N, 60°E), B (80°N, 70°E) and D (60°N, 60°E) in three cases of central zenithal projection (polar case), then find the distortion along AB & AD.
5. Find the shortest distance between the two points, A (30°N, 42°E) and B (45°N, 60°E) on a gnomonic map. If the center of map (40°N, 50°E).
6. Find the distortion in the length of parallel 30° between meridians 90° E and 90°W in a map made by stereographic projection (equatorial case).
7. Find the X and Y coordinates of the projection of the two points A (19° N, 51°E) and B (09° S, 51° E) represented by the Gnomonic and stereographic projections, when the central meridian is taken as 41° E. Find also the distortion in the length of the distance AB.