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 (5) –Mathematical Cylindrical Projection

1. What is the limitation of cylindrical projection?
2. Name any three types of cylindrical projection.
3. Differentiate between different types of mathematical cylindrical projection using only the shape of graticules.
4. What is the significance of loxodrome in navigation?
5. Why is Mercator's projection known as cylindrical orthomorphic (conformal) projection?
6. Draw the map of the world on simple cylindrical projection at the interval of 30°.
7. Draw the map of the world on normal conformal cylindrical projection at the interval of 30°.
8. Fill in the blanks with suitable words.

a. In simple cylindrical projection, scale along ..... is correct as far as parallels are concerned whereas in the case of meridians, the scale along ..... is correct.

b. Simple cylindrical projection is useful for ..... of the tropical areas.

c. Simple cylindrical projection is neither an ..... nor an ..... projection.

9. In a surveying map of the central part of Africa, it is required to compute the length of the line HM on the map and the *constant azimuth* of the curve connecting both points on the Earth from point M, if H (9° N, 32° E) and M (9° S, 28° E).
10. Which of the following statements are true and which are false?

a. Inter-parallel spacing decreases rapidly towards the pole in equal-area cylindrical projection.

b. In cylindrical equal area projection, the shape of the area does not get highly distorted at the higher latitudes.

c. The cylindrical equal area projection is suitable to show the distribution of tropical crops.