Explain your answers with neat sketches whenever possible. If not clearly stated, assume that the mean radius of the earth is R = 6371 km if not mentioned.

Assignment 2 – Intersection & Resection

1. The table gives the coordinates of three traverse points established for a section of the new road. A further control station is to be established the resection technique and by sighting on to station A, B and C. The angles measured in the field are ∠APB 40° 08' 24'' and ∠BPC 57° 36' 00'' calculate the length of side AP and the coordinates of station P.

Station	Easting (m)	Northing (m)
A	1000.000	2000.000
B	1078.331	2077.869
C	1172.191	2154.753

2. A resection is used to fix point P from A, B and C whose coordinates are listed below. Calculate the coordinates of P.

Station	E(m)	N(m)	Observed direction (not bearings)
A	82613.52	54609.70	**PA** 00° 00' 00''
B	86444.39	49487.16	**PB** 112° 17' 56''
C	80712.06	47693.38	**PC** 240° 32' 59''

3. With the following data, compute the coordinates of point C. (Note: C lies to the east of B)

Station	E	N		Observed distances
A	1161.634	3941.286	AC	223.201
B	1099.689	4085.466	BC	216.014

4. To provide extra control a construction site the coordinates of two targets T_1 and T_2 located at the Top of nearby building are obtained by intersection from control point A, B and C. using the data given below, calculate the coordinates of T_1 and T_2.

S.T	E(m)	N(m)	Observed angles			
A	195.002	344.901	T_1AB	123° 51' 06''	T_2AB	79° 48' 48''
B	176.600	227.615	ABT_1	28° 01' 18''	ABT_2	58° 17' 53''
C	357.646	193.511	T_1BC	63° 43' 48''	T_2BC	33° 27' 06''
BCT_1		63° 57' 05''	BCT_2	68° 23'45''		