ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : NOV / DEC 2011

REGULATIONS : 2008

FOURTH SEMESTER : CIVIL ENGG.

080100021 - SURVEYING II

Time : 3 Hours **Max. Marks : 100**

PART - A

(10 x 2 = 20 Marks)

ANSWER ALL QUESTIONS

1. Define movable hair tacheometry
2. What is anallatic lens?
3. Define check base
4. What are the effects of curvature and refraction?
5. What do you understand by normal equation?
6. What is true value of a quantity?
7. Define longitude
8. Define nautical mile
9. What is sounding?
10. What is isocentre?

PART - B

(5 x 16 = 80 Marks)

ANSWER ALL QUESTIONS

11. (a)A line was leveled tacheometrically with a tacheometer fitted with an analletic lens, the value of the constant being 100. The following observations were made, the staff having been held vertically

Contd., Q.NO: 11 (a)

Inst. Station	Height of axis	Staff stations	Vertical angles	Hair readings	Remarks
P	1.44	BM	$-2^0 24'$	1.20, 1.83, 2.46	R.L.of BM=37.725m
P	1.44	Q	$+4^0 36'$	1.35, 1.82, 2.29	
Q	1.41	R	$+6^0 12'$	0.72, 1.38, 2.04	

Compute the elevations of P, Q and R and the horizontal distances PQ and QR

OR

11. (b) A tachometer fitted with an anallatic lens was used to observe the following

From	Staff Station	Bearing	Vertical Angle	Axial Hair Reading
C	A	320^0	$+ 12^0$	0.906, 1.728, 2.550
C	B	50^0	$+10^{0,}$	0.744, 2.199, 3.654

The value of the constant was 100 and the staff was held vertically. Determine the length and gradient of AB.

12.(a) A line was measured on a slope with a 30 m steel tape and its length was found to be 217.47 m. The true length of the tape was 30.007 m at 25^0 C. The temperature at the time of measurement was 12^0 C and the following slopes were observed: 2^0 40' for 90 m; $1^0 30'$ for 60 m; $3^0 20'$ for 60 m; 1^0 for 7.47 m. The coefficient of expansion was 117×10^{-7} per 1^0C. Compute the true length of the line assuming the tape to be supported uniformly throughout its length

OR

12.(b) Directions were observed from a satellite station P, 2.75 m from station A and the following results were obtained:

Station	Observed direction	Distance in m from A
A	$0^0\,0'$	2199
B	$38^0\,48'$	1895
C	$102^0\,36'$	2277
D	$256^0\,12'$	2522

Correct the observed directions to those which would have been measured if the transit had been set up at station A.

13.(a) The following values were recorded for a triangle ABC, the individual measurements being uniformly precise

$\angle A = 62^0\,28'\,16''$ weight 6

$\angle B = 56^0\,44'\,36''$ weight 8

$\angle C = 60^0\,46'\,56''$ weight 4

Find the correct values of the angles

OR

13.(b) The angles A,B,C observed at a station O, closing horizon along with their standard errors are given below:

$\angle A = 81^0\,20'\,18'' \pm 2''$

$\angle B = 130^0\,40'\,28'' \pm 3''$

$\angle C = 147^0\,59'\,26'' \pm 4''$

Determine the corrected angles.

14.(a) A star was observed at western elongation at a station A in latitude $54^0 30'$ N and longitude $52^0 30'$ W. The declination of the star was $62^0 12'21''$ N and its ascesion 10 h. 58 m. 36 s., the G.S.T of G.M.N being 4 h. 38 m. 32 s. The mean observed horizontal angle between the referring object P and the star was $65^0\,18'\,42''$. Find (a) the altitude of the star at elongation, (b) the azimuth of the line AP and (c) the local mean time of elongation.

OR

14. (b) A star was observed for time by equal altitudes when on the prime vertical at a place in latitude $34^0\,20'$ N., given that the declination of the star was + $20^0\,30'\,38''.47$ and R.A. 16 h. 51 m. 15.89 s. Determine the altitude when on the prime vertical and local side real times of prime vertical transits.

15.(a) The sides AB and BC of a triangle ABC with stations in clockwise order are 2001 m and 3144 m respectively and the angle the angle ABC is $150^0\,24'$. Outside this triangle, a station O is established, the stations B and O being on the opposite sides of AC. The position of O is to be found by three point-resection of A, B, C, the angles AOB and BOC being respectively $24^0\,12'$ and $36^0\,6'$. Determine the distances OA and OC.

OR

15.(b) An area of 20 km x 10 km is to be photographed at a scale of 1 in 10000 from air using a camera of focal length 153 mm, the photographs being 23 cm square. A longitudinal overlap of 60% and a lateral overlap of 30 % is to be provided. The flying speed of the aircraft is 220 km/hr. Find (1) the flying height of the air craft and (2) the number of photo prints required to cover the area.

*****THE END*****