C 26877 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2012

CE 09 406/PTCE 09 405—SURVEYING—II

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. Differentiate between multiplying constant and additive constant.
2. Differentiate between lead line and range line.
3. What do you mean by triangulation figures ?
4. List out the *three* relationships between the co-ordinates.
5. Differentiate between oblique photograph and tilted photograph.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Describe the conditions under which the tacheometric survey is advantageous.
7. Explain location of sounding by observing two angles from the boat.
8. Explain different types of signals used in triangulation survey.
9. Find the most probable value and probable error of area of a rectangle whose sides are 150 ± 0.02 m and 200 ± 0.03 m.
10. Why is Sidereal time of great use in connection with astronomical observations ? State the relationship between Sidereal time, Right ascension and Hour angle.
11. To identify an object on photograph, what are the factors to be considered by the interpreter ?

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. (a) The following data were obtained in a tacheometric survey. The staff was held vertically. Multiplying constant = 100. Height of the instrument station 'P' was 1.560 m and RL of 'P' was 130.00 m.

Instrument station at	*Staff at*	*Bearing*	*Vertical angle*	*Staff readings*		
				Bottom	*Centre*	*Top*
P	Q	12° 25'	+0° 0'	1.880	2.250	2.620
	R	60° 45'	+15° 10'	1.830	2.150	2.470

Determine the distance QR and the difference in elevation between 'Q' and 'R'.

Or

Turn over

(b) In order to locate the position (P) of a sounding boat, the angles APB and BPC subtended at 'P' by three points A, B and C on the shore were measured with a sextant and found to be 28° 42' 40" and 30° 28' 20" respectively, the points B and P being on opposite sides of AC. The lengths of AB and BC were 918 m and 1074 m respectively and the angle ABC was 60° 50' 40". Compute the distances PA, PB and PC.

13. (a) Explain :

(i) Station adjustment.

(ii) Figure adjustment.

Or

(b) Distance between two proposed stations 'A' and 'B' in a triangulation is 110 km. Elevation of station 'A' is 1300 m while that of 'B' is 600 m. There is a point 'C' between 'A' and 'B' at a distance 50 km from 'A' and having an elevation of 238 m. Ascertain whether 'A' and 'B' are intervisible. If not find the minimum height of tower required at 'B', so that 'B' is visible from 'A' with a minimum clearance of 2.5 m above the surface of the ground.

14. (a) What is meant by a Sidereal day ? Find the local mean time of transit of a star in longitude 7° 18' E on December 26. Given that the Sidereal time on Greenwich Mean Noon = 18 h. 18 m. 48 s and Right Ascension of the star = 10 h. 2 m. 34 s.

Or

(b) An observation was made on a star lying west of the meridian at a place in latitude 40° 20' 36" N to determine the azimuth of the survey line AB. The mean observed altitude was 42° 10' 24" and the clockwise horizontal angle from AB to the star was 100° 18' 48". Find the azimuth of the survey line AB if the declination of the star was 24° 54' 35" N.

15. (a) State the sources of errors in Total station and briefly explain each one of them.

Or

(b) Two photographs are taken with a photo theodolite from stations 'A' and 'B' 150 m apart, the lines of collimation being at right angles to AB in each case. A point 'C' appears on the photograph from 'A' at 3.29 cm to the right of the vertical hair and 0.58 cm below the horizontal hair and on the photograph from 'B' at 3.85 cm to the left of the vertical line and 1.88 cm below the horizontal hair. 'B' is to the right of 'A' and focal length of the camera is 150 mm. Calculate the co-ordinates of 'C' taking 'A' as origin and the difference in level of the two collimation planes.

(4 × 10 = 40 marks)