

B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Fourth Semester

CIVIL ENGINEERING

U07CE404: Surveying II

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Anallatic lens is provided to make additive constant equal to
a) 100 b) 0 c) 1 d) 90
2. The subtense bar is used to measure
a) Horizontal distance b) Vertical distance c) Vertical angle d) Slope
3. ---- forms the most important part of triangulation
a) Tie line b) Base line c) Check line d) Offset
4. The operation of applying correction due to the eccentricity of station is known as
a) Satellite station b) Refraction correction
c) Reduction to centre d) Curvature correction
5. Principle of least square states that the most probable value of an observed quantity available from a given set of observations is the one for which the sum of --- is minimum
a) Residual error b) Square of residual error
c) Square root of residual error d) Probable error
6. If $A = 28^{\circ} 24' 1''$ Weight 4 and $B = 38^{\circ} 24' 1''$ Weight 2 then the weight of $A+B = 66^{\circ} 48' 1''$ is given as ----
a) 0.75 b) 2 c) 1 d) 1.33
7. ----- is the point on the upper portion of the celestial sphere marked by plumb line above observer
a) Nadir b) Zenith c) Equator d) Celestial pole
8. Equation of time = apparent solar time - ----
a) Sidereal time b) Mean solar time c) Hour angle d) Solar apparent time
9. Fathometer is used to measure ---
a) Elevation b) Tide c) Depth of water d) wave height

10. Cadastral survey is used to locate

- a) Boundaries of field
- b) Features of country
- c) Highway alignment
- d) Water supply scheme

PART B (10 x 2 = 20 Marks)

- 11. Define tacheometry
- 12. State the advantages of stadia method
- 13. Define signal
- 14. Classify triangulation system
- 15. What is meant by correlates?
- 16. Define normal equation
- 17. Define celestial sphere.
- 18. Define azimuth
- 19. Define cartography
- 20. Define parallax

PART C (5 x 14 = 70 Marks)

21. a) The following observations were made using tacheometer with a multiplying constant and additive constant 100 and 0.1 respectively.

Instrument Station	Staff Station	Vertical angle	Stadia hair readings
P	BM	$-4^{\circ}22'$	1.050, 1.103, 1.156
P	Q	$10^{\circ}0'$	0.952, 1.055, 1.158

Calculate the reduced level of Q. Assume R.L. of B.M. as 1958.30 m.

(OR)

- b) (i) With neat sketches explain how the tacheometric constants can be determined. (7)
- (ii) The following observations were taken with a transit theodolite.

Instrument Station	Staff Station	Target	Vertical angle	Staff readings
O	A	Lower	$4^{\circ}30'$	0.950
O	A	Upper	$6^{\circ}30'$	3.250

Calculate the horizontal distance between the instrument station and staff station and also the R.L. of A, if R.L. of instrument axis is 255.500 m. (7)

22. a) (i) What are the points to be kept in mind before selecting triangulation stations. (8)

(ii) How will you extend a base line. (6)

(OR)

b) The triangulation stations A and B 50 KM apart have elevations 243 m and 258 m respectively. The intervening ground may be assumed to have a uniform elevation of 216m. Find the minimum height of the signal required at B so that the line of sight may not pass nearer the ground than 2.4m.

23. a) Find the most probable values of the following station observations closing the horizon.

$$A = 28^{\circ} 24' 28.4'' \quad \text{Weight 2}$$

$$B = 32^{\circ} 14' 16.3'' \quad \text{Weight 1}$$

$$C = 299^{\circ} 21' 11.8'' \quad \text{Weight 2}$$

$$A+B = 60^{\circ} 38' 50.7'' \quad \text{Weight 1}$$

$$B+C = 331^{\circ} 35' 27.8'' \quad \text{Weight 3}$$

(OR)

b) The following angles were measured at a station O so as to close the horizon

$$AOB = 83^{\circ} 42' 28.75'' \quad \text{Weight 3}$$

$$BOC = 102^{\circ} 15' 43.26'' \quad \text{Weight 2}$$

$$COD = 94^{\circ} 38' 27.22'' \quad \text{Weight 4}$$

$$DOA = 79^{\circ} 23' 23.77'' \quad \text{Weight 2}$$

Adjust the angles by method of correlates.

24. a) Explain the step by step procedure for the determination of azimuth of a line by extra meridian observations to sun.

(OR)

b) Define remote sensing. Briefly write how remote sensing is used in Civil Engineering

25. a) Name the various methods for locating soundings. Explain any two methods.

(OR)

b) Write short notes about the following.

(i) Electromagnetic distance measurement (8)

(ii) Stereoscope (6)
