



**B.E DEGREE EXAMINATIONS: NOV/DEC 2014**

(Regulation 2013)

Third Semester

**CIVIL ENGINEERING**

U13CET302: Surveying-I

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The length of one link of Surveyor's Chain is
  - a) 20 cm
  - b) 1 foot
  - c) 0.6 foot
  - d) 0.5 foot
2. Optical square is used to .....
3. The difference between back bearing and fore bearing is
  - a)  $90^\circ$
  - b)  $270^\circ$
  - c)  $180^\circ$
  - d)  $0^\circ$
4. Plumbing fork is also known as.....
5. The fly leveling is also called as
  - a) Profile levelling
  - b) Precise levelling
  - c) Differential levelling
  - d) Cross sectioning
6. The correction for refraction is equal to .....
7. Plunging the telescope means revolving the telescope
  - a)  $180^\circ$  in vertical plane
  - b)  $180^\circ$  in horizontal plane
  - c)  $90^\circ$  in horizontal plane
  - d)  $90^\circ$  in both vertical and horizontal plane
8. In a closed traverse surveying if the end point of the traverse not coincides with starting point, the discrepancy is known as .....
9. In the Tacheometer, the distance between upper and lower cross hairs is called as
  - a) Staff intercept
  - b) Stadia interval
  - c) Mid interval
  - d) Hair interval
10. An ordinary external theodolite becomes on Tacheometer when an ----- is fitted to the telescope.

**PART B (10 x 2 = 20 Marks)**

**(Not more than 40 words)**

11. Give a list of equipments required for conducting a chain survey
12. If a land is having an size of 150 m X 210 m, calculate its area in acres?
13. What is meant by magnetic declination?
14. State the two point problem in plane table surveying.
15. Write the use of change point in leveling.
16. Define the sensitiveness of bubble.
17. If L and D are the latitude and departure of the closed traverse give the value of closing error.
18. Name the fundamental lines (or) axes of transit.
19. Give the distance equation when the line of sight is inclined.
20. Write the principle of stadia method.

**PART C (5 x 14 = 70 Marks)**

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. (i) A steel tape 20 m long standardized at  $10^{\circ}$  C with a pull of 100 N was used for (10) measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was  $25^{\circ}$ C and the pull exerted was 160 N. Weight of 1 cum of steel = 78.6 kN. Weight of tape = 8 N.  $E = 2.11 \times 10^8$  kN/m<sup>2</sup>. Co-efficient of expansion of tape per  $1^{\circ}$  C =  $12 \times 10^{-6}$ .
- (ii) List the instruments which are used to set out the right angles (4)

22. a) The following fore and back bearings were observed in a closed traverse

Line	FB	BB
AB	$124^{\circ} 30'$	$304^{\circ} 30'$
BC	$68^{\circ} 15'$	$246^{\circ} 0'$
CD	$310^{\circ} 30'$	$135^{\circ} 15'$
DA	$200^{\circ} 15'$	$17^{\circ} 15'$

At what stations do you suspect local attraction? Find the correct bearing and interior angles.

**(OR)**

- b) (i) Name the different method of plane table surveying (4)  
(ii) Explain the procedure of solving Two point problem by plane table surveying (10)

23. a) The following series of reading of back sights and fore sights were taken in fly leveling. The first reading was taken on a point of R.L. of 200 m. Find R.L. of all points. Apply the usual checks.  
1.355, 1.625, 1.895, 2.075, 1.405, 1.295, 2.135, 1.685, 2.145, 1.865, 1.735, 1.505

(OR)

- b) (i) How the effect of curvature and refractions are eliminated by reciprocal leveling. (7)  
(ii) The following perpendicular offsets were taken at 10m intervals from a survey line to an irregular boundary line:  
3.25, 5.6, 4.2, 6.65, 8.75, 6.2, 3.25, 4.2, 5.65  
Calculate the area between the survey line and irregular boundary line, and first and last offsets, by the application of trapezoidal rule and Simpson's rule

24. a) Discuss about the different parts of transit Theodolite with neat sketch

(OR)

- b) In order to ascertain the elevation of the top (Q) of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 100m apart, the stations P and R being in line with Q and P is near to Q. The angles of elevation of Q at P and R were  $28^{\circ} 42'$  and  $18^{\circ} 6'$  respectively. The staff readings upon the bench mark of elevation 287.28m were respectively 2.870m and 3.750m when the instrument was at P and at R, the telescope being horizontal. Determine the Elevation of the foot of the signal if the height of the signal above its base is 3m.

25. a) Derive the formulae to calculate the horizontal distances and vertical intercepts for different cases by Tangential method

(OR)

- b) (i) State the Characteristics of Contours. (8)  
(ii) An observer standing on the deck of a ship just sees a light house. The top of the light house is 50m above the sea level and the height of the observer's eye is 10m above the sea level. Find the distance of the observer from the light house. (6)

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