

Seat No.	
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**S.Y. B. Tech. (Civil) (Semester - III) (CBCS)**

**Examination, November - 2019**

**SURVEYING - I**

**Sub. Code: 73198**

**Day and Date : Tuesday, 26 - 11 - 2019**

**Total Marks : 70**

**Time : 10.00 a.m to 12.30 p.m.**

- Instructions :**
- 1) Attempt any three questions from each section.
  - 2) Figures to the right indicate full marks.
  - 3) Make suitable assumptions wherever necessary and mention it clearly.
  - 4) Use of non-programmable calculator is allowed.

**SECTION - I**

- Q1) a)** Explain necessity of correction for curvature & refraction with derivation for the same. [5]
- b)** The following offsets observations were made during testing of a dumpy level Staff reading at. [7]

Instrument At :	A	B
Midway :	1.875	1.790
Near A :	1.630	1.560

Two pegs A & B are 100m apart & dist. between instrument & A is 10m. Calculate correct staff readings on A & B.

- Q2) a)** Define area of zero circle and methods of calculating area of zero circle. [5]
- b)** The following offsets from a traverse line to an irregular boundary were measured at points 10.0m apart. [6]

Chainage (m) :	0	10	20	30	40	50	60	70	80
Offset (m) :	6.15	10.92	9.03	11.58	14.22	12.33	9.72	10.32	7.65

Calculate the area enclosed by

- i) Trapezoidal rule
- ii) Simpson's rule

**P.T.O.**

- 13) a) What is the principle of plane table surveying? Explain the term orientation [6]  
 b) Explain Intersection method of plane table survey with neat sketch. [5]
- 14) Write short notes on (any three) [12]  
 a) Reciprocal Levelling.  
 b) Indirect contouring.  
 c) Capacity contouring.  
 d) Advantages and Disadvantages of plane table survey  
 e) Sensitivity of bubble tube.

**SECTION - II**

- 15) a) Explain the Repetition method of horizontal angle measurement with reference to- [6]  
 i) Procedure and recording with relevant example.  
 ii) Errors eliminated by this method.
- b) A theodolite was set up at a distance of 200 m from a tower. The angle of elevation to the top of the parapet was  $8^{\circ}18'$  while the angle to the foot of the wall was  $2^{\circ}24'$ . The staff reading on the B.M. of R.L. 248.362 with the telescope horizontal was 1.286 m. Find the height of the tower and the R.L. of the top of the parapet. Draw a proper sketch showing tower, instrument position and various parameters used in calculations. [6]
- 16) a) Calculate the consecutive coordinates, closing error and direction of closing error for the traverse ABCDEA. [6]

Line	AB	BC	CD	DE	EA
Length in m	89.31	219.76	151.18	159.10	232.26
Whole circle Bearing	$45^{\circ}10'$	$72^{\circ}05'$	$161^{\circ}52'$	$228^{\circ}43'$	$300^{\circ}42'$

- b) The table below gives the lengths and bearings of the lines of a traverse ABCDE, the length and bearing of EA having been omitted. Calculate the length and bearing of the line EA. [5]

Line	Length (m)	Bearing
AB	204.0	87°30'
BC	226.0	20°20'
CD	187.0	280°0'
DE	192.0	210°3'
EA	?	?

- Q7) a) Explain the procedure for carrying out preliminary survey for a new railway alignment. [6]
- b) What is hydrographic survey? List down the various purpose for which it is carried out. [5]

Q8) Write short notes on any three of following. [3×4=12]

- Spire Test.
- Deflection angle and its measurement.
- Balancing the Traverse.
- Construction and use of box sextant.
- Transfer of centre line alignment inside a tunnel.

