

SUBJECT CODE:- 491
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(Civil) Examination Nov/Dec 2015
Surveying-I
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B
- i) Q.No.1 and Q.No.6 are compulsory.
 - ii) Answer any two questions from the remaining questions in each section.
 - iii) Figures to the right indicate full marks.
 - iv) Assume suitable data, if necessary.

Section A

- Q.1 Attempt any five 10
- 1) Give the primary classification of ‘Survey’ and distinguish between them.
 - 2) What is local attraction? How it is deleted
 - 3) What do you mean by “closing error” in traverse survey
 - 4) What is “Indirect Ranging”, explain the method of ranging a line across a rising ground.
 - 5) Explain temporary adjustments of prismatic compass
 - 6) What are true bearings and Magnetic bearings
 - 7) Give the advantages of plane table surveying.
 - 8) Statement of “Three point problem”.
 - 9) What do you mean by contour interval and horizontal equivalent
 - 10) Explain “GTS” bench mark.
- Q.2 a) The length of a chain line when measured with a 20m chain, was found to be 1340m but when a 30m chain, which had one link too short was used for the purpose, the line was found to be 1350m long. What was the error in the 20m chain? 08
- b) Explain the working of the following with neat sketches. 07
- i) Line ranger
 - ii) Optical square
- Q.3 a) Below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local alteration is suspected. 08
- | Line | Fore bearing | Back bearing |
|------|--------------|--------------|
| PQ | 124° 30' | 302° 30' |
| QR | 68° 15' | 246° 00' |
| RS | 310° 30' | 135° 15' |
| SP | 200° 15' | 17° 45' |
- b) Write a note on recording of field notes. Explain with the help of a typical page with reference to chain surveying. 07
- Q.4 a) Write a detail note on profile levelling 07
- b) In a two peg test of a dumpy level the following readings were taken: 08
- i) Instrument at C midway between A and B, AB = 100m
 Staff reading on A = 1.585
 Staff reading on B = 1.22

- ii) Instrument at near A.
 Staff reading on A = 1.425
 Staff reading on B = 1.150
 Is the line of collimation inclined upwards or downwards and by how much? With the instrument at A what should be the staff reading on B in order to place the line of collimation horizontal.

- Q.5 a) Explain in detail the procedure for solving a two point problem. 08
 b) Explain the methods of orientation by 07
 i) Magnetic meridian
 ii) Back sighting

SECTION-B

- Q.6 Attempt any five: 10
 1) What is tachometry?
 2) Discuss the different systems of tachometric measurements
 3) How are tachometric constants determined .
 4) Why are both the Verniers of a theodolite recorded?
 5) Enlist the fundamental lines of a transit theodolite.
 6) How is parallax eliminated
 7) What do you mean by swinging and transiting a theodolite
 8) What is “zero circle” are of planimeter
 9) Define direct angle
 10) Define “Mass diagram”

- Q.7 a) Write a note on “Beaman Stadia Arc”. 05
 b) The following observations are recorded on a vertical staff. Find R.L of relation A, B and C. The R.L of bench mark is 300.75m. the tachometric constants are $k = 100$ $c = 0.3$. 10

| Inst station | Height of instrument (m) | Staff station | Vertical angle | Stadia readings | | |
|--------------|--------------------------|---------------|------------------|-----------------|-------|-------|
| | | | | u | m | l |
| A | 1.520 | BM | $-8^{\circ}30'$ | 1.825 | 1.225 | 0.830 |
| A | 1.520 | B | $+7^{\circ}30'$ | 0.960 | 1.520 | 2.135 |
| B | 1.720 | C | $+11^{\circ}10'$ | 1.660 | 2.110 | 2.980 |

- Q.8 a) The lengths and bearings were recorded in running a theodolite traverse in anticlockwise direction. The length of CD and DE could not be measured in the field: 08

| Line | Length | Bearing |
|------|--------|------------------|
| AB | 130m | $0^{\circ}0'0''$ |
| BC | 84.3m | $334^{\circ}48'$ |
| CD | ? | $255^{\circ}20'$ |
| DE | ? | $123^{\circ}36'$ |
| EA | 88m | $35^{\circ}36'$ |

- b) Explain in detail the computations in “Gates Traverse Table” 07

- Q.9 a) What is Prismatic correction? Work out such correction for 08
- i) One level section
 - ii) Two level section
- b) Explain the "Double Meridian Distance" method for computation of areas. 07
- Q.10 a) Write a note on 08
- i) Measurement of vertical angle by using a theodolite
 - ii) Measurement of magnetic bearing of a line.
- b) Explain 07
- i) Independent and consecutive coordinates
 - ii) Theory of Anallactic lens.

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