Seat No.	

R - 1321

Total No. of Pages : 3

S.E. (Civil) (Semester -III) Examination, December - 2014
SURVEYING - I
Sub. Code : 42655

Day and Date : Monday, 08 - 12 - 2014 **Total Marks : 100**

Time : 10.00 a.m. to 1.00 p.m.

Instructions :
1) **Answer any Three questions from Each section.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data.**
4) **Answer shall be supported by adequate sketches.**

SECTION - I

Q1) a) Explain the derivation for permanent adjustment by two peg method with neat sketches and the test, correction and check? **[8]**

b) What are the effects of earth's curvature and atmospheric refraction on observed readings in Levelling? Derive an expression for combined correction due to curvature & refraction. **[8]**

Q2) a) The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line - 3.82, 4.37, 6.82, 5.26, 7.59, 8.90, 9.52, 8.42 and 6.43 m. Calculate the area enclosed between the survey line and boundary by **[6]**

i) Simpson's rule

ii) Trapezoidal rule

iii) Average ordinate rule

b) What is strength of fix in plane table surveying? When is it said to be good or bad? **[6]**

c) Distinguish between direct and indirect contouring based on : **[6]**

- procedure
- contour interval
- merits and demerits

P.T.O.

Q3) a) Explain reciprocal levelling w.r.t, [6]

- Conditions under which adopted
- Procedure and equations
- errors removed by this method

b) A planimeter of which constants are unknown is to be used for the determination of area drawn on paper. What steps will you follow to determine the area? [6]

c) Calculate the correct readings at B and error of collimation, for : Instrument at A, the staff reading at A & B are 3.45 & 1.50 respectively. Instrument at B, the staff reading at A & B are 2.74 & 1.105 respectively. [6]

Q4) Write short notes on any four (4 marks each) [16]

a) Name of minor instruments and their uses
b) Precise levelling
c) Orientation
d) Sensitivity of bubble
e) Auto level and tilting level

SECTION - II

Q5) a) What are the fundamental lines of a transit theodolite? Explain any one relationship of the fundamental lines w.r.t. its permanent adjustment. [5]

b) Give the functions of the following parts in a transit theodolite - [5]

i) Upper clamp screw
ii) Lower clamp screw
iii) Optical plummet
iv) Vertical tangent screw
v) altitude bubble

c) Following table gives the lengths and bearings of a closed traverse ABCDEA. The lengths of the two sides BC & CD could not be measured. Compute the omitted measurements : [6]

Line	Length (m)	Reduced bearing	Latitude	Departure
AB	730.00	S 60°00'E	-365.00	632.20
BC	?	N 62°18'E	-	-
CD	?	N37°42'W	-	-
DE	940.00	S 55°24'W	-533.70	-733.80
EA	575.00	S 02°42'W	-574.40	-27.08

Q6) a) Define the terms with neat sketches : [6]

i) Latitude & Departure

ii) Closing error in a traverse

iii) Consecutive & independent coordinates.

b) Derive the expression for double plane method for determination of R.L. of an elevation of a point. [6]

c) Determine the elevation of top of a flag post, when the following observations were taken. [6]

Instrument station	Staff reading on B.M.	Angle of elevation	Remarks
A	1.26	19°22'	R.L of B.M. - 145.00 m
B	1.085	07°15'	Dist. Between A & B - 50 m

Q7) a) What do you understand by the terms Swinging, transiting, Telescope normal & Telescope inverted. [6]

b) What do you understand by sounding? Describe the possible methods of locating points in sounding. [6]

c) Calculate the corrected consecutive coordinates using transit rule for the following : [6]

Line	AB	BC	CD	DE	EA
Length in m.	186	164	303	162	240
Reduced Bearing	N24°30'E	N 73°18'W	S63°44'W	S42°30'E	N86°08'E

Q8) a) Explain the method of transferring center line alignment inside a tunnel by a neat sketch. [5]

b) Explain the procedure for carrying out preliminary survey for a new road alignment of about 10 km in length. [5]

c) Explain the procedure for Setting out of a building. [6]

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