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 Engineering and Technology
 Warananagar, Dist. Kolhapur

S.E. (Civil) (Semester - III) Examination, December - 2014 :

SURVEYING - I (Revised)

Sub. Code : 63339

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)** What are the Temporary adjustments for dumpy Level & Theodolite? Name the different fundamental lines of Dumpy Level & Theodolite with neat sketches? [8]
- b) What is the effect 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
- i) Simpson's rule
 - ii) Trapezoidal rule
 - iii) Average ordinate rule. [6]
- 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]
- suitability & procedure.
 - merits and demerits.

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- Q3) a) Explain reciprocal levelling w.r.t, [6]
- Conditions under which adopted.
 - Procedure and equations.
 - Errors removed by this method.
- b) The Length of tracing Arm of a planimeter is 15.44 cm. The distance from the hinge to the anchor point is 15.00 cm. The diameter of rim of the wheel is 2 cm. The wheel is placed outside (beyond the hinge from the tracing point) at a distance of 4 cm. Calculate the Area of the Zero Circle? [6]
- c) What do you understand by Orientation in Plane Table surveying? Name and explain the different methods with sketch? [6]

Q4) Write short notes on any four : [16]

- a) Computing capacity by contouring.
- b) Balancing of Traverse.
- c) Three point problem in Plane Table Survey.
- d) Sensitivity of bubble and factors affecting sensitivity.
- e) Auto level and tilting level.

SECTION - II

- Q5) a) Explain Spire Test for Theodolite with a neat sketch. [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
AB	100.50	N30°30' E
BC	?	S 45°00' E
CD	75.00	S 40°30' W
DA	50.50	S 60°00' W
EA	?	N 40°015' W

- 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 -145.00m
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]

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- b) What do you understand by hydrographic surveying? Describe at least two methods of sounding for hydrographic surveying. [6]
- c) Calculate the corrected consecutive coordinates using Bowditch's rule for the following: [4]

Line	AB	BC	CD	DE	EA
Length in m.	186	164	303	162	240
Reduced Bearing	N24°30'E	N73°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. [6]
- b) Explain the procedure for carrying out preliminary survey for a new road alignment of about 10 km in length. [6]
- c) Explain the usage of any two minor instruments for different surveys. [6]

