B.Tech Degree III Semester Examination November 2005

CE 302 SURVEYING I
(Common for 1999 &2002 Admissions)

Time : 3 Hours   Max. Marks:100

(All questions carry *EQUAL* marks)

I   a)   How would you orient in direction a chain survey plot on the drawing sheet?
     b)   Set out clearly precautions a surveyor should observe in booking the field work of a chain survey.
     c)   Describe how the chain can be continued when a thick forest intervenes.

OR

II   a)   What is 'hypotenusal allowance'? Find its value. How is it allowed while measuring distance in the field?
     b)   What are the conventional signs adopted to denote the following?
               i)   a road in cutting   ii)   a light house
               iii)   a single line railway track iv)   a road bridge
               v)   a cemetery
     c)   A chain line ABC crosses a river at right angles B and C are located on the near and distant banks respectively. AB = 50m, BD = 100m and $\angle ABD = 90°$. The whole circle bearings of C and A taken at D are 300° and 210° respectively. Find the width of the river.

III a)   Differentiate Prismatic compass from Surveyor's compass?
     b)   What is local attraction? What precautions are you to take to avoid local attraction during compass traverse survey?
     c)   Below are the bearings observed in traversing with a compass in a place where local attraction was suspected:

Line	Forebearing	Backbearing
AB	$S45°30'E$	$N45°30'W$
BC	$S60°00'E$	$N60°40W$
CD	$S5°30'E$	$N3°20'W$
DA	$N4°30'W$	$S6°00'E$

     At what stations do you suspect local attraction? Find the corrected bearings of the lines.

OR

IV   a)   State the advantages and disadvantages of plane table surveying over chain and compass surveying.
     b)   How can you fix your position on a map, if two well defined objects, the positions of which are already marked on this map, are visible? Draw neat sketch?

V   a)   What are the combined effect of earth's curvature and retraction in leveling? Give expressions for the same.
     b)   The following consecutive readings were taken with a level and a 4 metre leveling staff on continuously sloping ground at a common interval of 30m
           0.585 on A, 0.935, 1.950, 2.845, 3.640, 3.940, 0.965, 1.035, 1.680, 2.535, 3.840,
           0.955, 1.570, 3.015 on B
           The elevation of A was 100.000. Make up a level book and apply the usual checks.
           Determine the gradient on the line AB.

OR

VI   a)   What are the sources of error in leveling? What precautions should be taken to guard against them?
     b)   What is meant by contouring? Describe the various methods of contouring, and discuss their merits and demerits.

VII   a)   Describe a planimeter. Explain how you would use it in finding the area of a given figure.

       b)   The following give the values in metre of the offsets from a chain line to an irregular boundary:

Distance :	0	15	30	45	60	75	90	105	120
Offset :	3.18	4.62	6.06	5.61	4.92	6.24	6.72	5.82	5.28

Calculate the area included between in chainline, the irregular boundary and the first and last offsets by Simpson's rule.

OR

VIII   With the help of sketches write *short notes* on:

              i)   Pantagraph
              ii)   Box Sextant
              iii)   Hand levels

IX   a)   Describe how you would set up a theodolite at a given station and measure a horizontal angle by repetition. State what errors will be eliminated by the method.

      b)   Following are the lengths and bearings of a traverse ABCD:

Line	Length in meters	Bearing
AB	248.0	30°
BC	320.0	140°
CD	180.0	210°

Calculate the length and bearing of the lines DA.

OR

X   a)   What is tacheometer? State the procedure of determining the constant of this instrument.

   b)   Explain Direct reading Tacheometers.

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