B.E (Civil) Part-II
3rd Semester Final Examination, 2007
Subject: *Surveying - I*

Code No.: CE: 301
Branch: Civil Engineering

Time: 3 Hours.   Use separate Answer script for each half.

Full Marks: 70

FIRST HALF
(Answer Q. No. 1 and any TWO from the rest)

1. Answer <u>any three</u> question: (3 X 5 = 15)

   a) What is slope rails or batter boards? Briefly describe its use in setting out works.
   b) Write in brief about "Profile leveling".
   c) Describe the of Curvature in leveling.
   d) Describe in brief about construction and protection of control points in setting out works.
   e) Describe in brief about the importance of change point or turning point in differential levelling.

2. a) Define "Back Sight" and "Height of Instrument" in levelling.

   b) The following staff readings were observed successively with level, the instrument having been moved forward after the second, fourth and eighth readings: 0.865, 1.135, 2.110, 1.345, 2.830, 3.025, 4.105, 0.120, 1.875, 2.030, 3.675.

   The first reading was taken with the staff held upon a benchmark of elevation 132.135. Enter the readings in level-field book and reduce the levels. Apply the necessary checks. Find the gradient joining the first and the last point assume that a 20m. chain has been used.

   (2+8 = 10)

3. What are face left and face right condition? State the important relationship of the geometric features of a transit theodolite. Describe the measurement of horizontal angle by method of repetition.   (2+3+5 = 10)

4. a) Explain graphically what is closing error in a closed traverse. State transit rule and Bowditch rule for adjustment of a closed traverse.

   b) An abstract from a traverse sheet for a closed traverse is given below.

Line	Length (m.)	Azimuth
AB	350	$152^0 46' 12''$
BC	580	$64^0 50' 54''$
CD	360	$01^0 10' 06''$
DE	380	$265^0 08' 48''$
EA	400	$231^0 22' 00''$

   Balance the traverse by Bowditch rule.   (2+1+2+5 = 10)

SECOND HALF
(Answer Q.No.1 and any TWO from the rest)

5. 1. Answer <u>any three</u> questions: (3×5=15)

   i) Why the part to whole principle is not followed in surveying?

   ii) Describe briefly how plane surveying differs from geodetic surveying?

   iii) What is positive cumulative error? Write the reasons for which these types of errors are occurred.

   iv) Why are the letters E and W interchanged from their true positions in case of Surveyor's Compass?

   vi) Discuss the advantages and disadvantages of Plane table surveying.

6. 2. (a) Determine the limiting length of offset in Chain surveying if the errors occur in length and direction combined? (4)

   (b) There is an obstacle in the form of a pond on the main chain line AB. Two points C & D were taken on the opposite side of the pond. On left of CD, a line CE was laid out 100m in length and a second line CF, 80m long was laid out on the right CD such that E, D and F are in the same straight line. DE & DF were measured and found to be 62m and 59m respectively. Find out the obstructed length CD. (6)

7. 3. (a) What is meant by variation of declination? Explain the different types of variation of declination. (4)

   (b) The bearing of one side of a regular hexagon is 45°. Calculate the bearings of the remaining side, taking the sides in clockwise order. (6)

8. 4. (a) Explain the suitability of Plane table surveying (3)

   (b) What is two-point problem? Describe the procedure in detail. (7)