Shree Datta Polytechnic College , Dattanagar.
Class test No. 1

Course Name – Civil Engineering (CE4G)　　　　　　　　**Date:** 23/01/2014

Subject : 　　**Advance Surveying**　　　　　　　　　　　**Marks** -   25

Sub Code : 　　**17419**　　　　　　　　　　　　　　　　**Duration** -1 Hr.

MODEL ANSWER

Q1 Attempt any Three　　　　　　　　　　　　　　　　**3x3= 09 Marks**

　a)　Define the terms-　　1) Face left　　2) Face right　　3) Swinging the telescope

ANS – 1. When vertical circle is to the left of the observer while taking reading then it is known as
　　　Face left.

　　2. When vertical circle is to the right of the observer while taking reading then it is known as
　　　Face right.

　　3. The process of turning the telescope in horizontal plane about vertical axis is known as
　　　swinging the   telescope.

　b)　Define Contour interval & Horizontal equivalent.

ANS -　Contour interval – The vertical distance between two successive contour.

　　　Horizontal equivalent - The horizontal distance between two successive contour .

　c)　Write the formula for calculation of area of irregular figure.

ANS -　　A = M(FR – IR +/- 10N + C)

　　　Where M = multiplying constant, FR = Final reading, IR = Initial reading, N = No. of times zero
passes the index mark, C = Additive constant.

　d)　State the classification of theodolite

ANS -　1. Transit theodolite – When telescope of the theodolite rotate @ horizontal axis in vertical
palne.

　　　2.Non-Transit theodolite – When telescope of the theodolite cannot rotate @ horizontal axis
　　　in   vertical palne.

Q2 Attempt any Two　　　　　　　　　　　　　　　　**4x2= 08 Marks**

　a)　State the characteristics of contour.

ANS -　1) All points on the same contour have same elevation or heights.
　　　2) Two contour lines of different elevation can not cross or merge one another on the map except
　　in   case of overhanging cliff, vertical cliff and dam.

3) Contour lines close together indicates steep slope.
4) Contour lines far apart indicate gentle slopes.
5) Contour lines equally space indicates uniform slope
6) Straight parallel contour line indicate plane surface.
7) Irregular contour lines indicates rough surface.
8) Ridge lines and valley lines cross contours at right angles.+
9) A closed contour line with one or more, higher one inside it indicate hill.

b) State the relation between fundamental axis of theodolite.

ANS - Fundamental axis of theodolite are as follows
1) Axis of line of collimation 2)Vertical axis 3) Axis of telescope 4) Axis of bubble tube or bubble axis.
2) Relationship between fundamental axis are as follows.
   i) The line of collimation should be parallel to the bubble axis.
   ii) The line of collimation and axis of telescope should coincide with one another.
   iii) The bubble axis should be perpendicular to the vertical axis.

   iv) The horizontal axis must be perpendicular to vertical axis.

c) The following readings were recorded by a planimeter with anchor point outside the fig

IR = 9.358, FR = 4.425, M = 100, C = 28.4

Calculate the area of fig. when it is observed that zero passes index mark once in
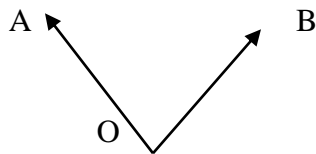
anticlockwise direction.

ANS - A = M(FR – IR +/- 10N + C)
        A = 100(4.425-9.358- (10 x 1) + 0)
        A= -1493.3cm2

Q3 Attempt any Two   4x2= 08 Marks

a) State the procedure for measurement of horizontal angle by transit theodolite.

ANS - To Measure the deflection angle AOB the following procedure are followed

1) Set up the theodolite at O and level it accurately.
2) With both plates clamped, the vernier A reading O, Take sight on A.
3) Plunge the telescope to direct the line of sight OA produced.
4) Loosen the upper plate and turn the telescope clockwise to take foresight on B . Read both vernier the mean of two vernier readings gives the approximate value of horizontal angle at O (α_1)
5) Repeat the procedure by change the face.
6) Find the mean of final vernier readings. Thus the horizontal angle is the average value both.

b) Write the formula for calculation of volume by Trapezoidal rule & Prismodal rule.

ANS - Trapezoidal formula:P V= D/2(A1 +An+2 (A2 +A3 + …..+An-1))

prismoidal formula: V== D/3(A1 + An + 4(A2+A4+An-1)+2(A3+A5+…..+An-2)

Prismoidal formula is applicable for sections with odd nos and Trapezoidal formula is applicable for sections with even nos.

c) State any four components of Transit theodolite with their use.

ANS - Components of the theodolite –

1. Levelling head – To form vertical axis.

2. Two spindles – Forms the vertical axis.

3. Lower circular plate – To measure the horizontal angle.

4. Upper circular plate – To measure the horizontal angle.

5. Verticle circle - To measure the vertical angle.