Sample Question Paper - I

Course Name : Civil Engineering Group.   9045

Course Code : CC/CS/CR/CV

Semester   : Fourth

Subject   : Advance surveying

Marks   : 80   Time : 3 Hours.

Instructions:

1. All questions are compulsory.

2. Illustrate your answers with heat sketches whenever necessary.

3. Figures to the right indicate full marks.

4. Assume suitable data it necessary.

5. Preferably write the answers in sequential order.

Q 1A: Attempt any Four of the following: **08 Marks**

a)   Enlist the four instruments used in plane table surveying.

b)   What are the value of fi & f + c are generally required for a Tachometer.

c)   State the four advantages of total station over level & Transit theodlite.

d)   What are the nature of Aerial Photographs.

e)   Define remote sensing.

Q 1B: Attempt any Two of the following: **08 Marks**

a)   When the plane table can be said to be correctly oriented, explain it by sketch.

b)   Name the process of turning the telescope of a theodolite in

i) Horizontal Plane ii) Vertical plane iii) The reading taken by the observer
   when the vertical circle of the instrument is on the left of the observer and
   right of the observer.

c)   State the situation of offsets from long chord and Rankine's method of
      deflection angle is suitable in curve setting . Describe any one method.

Q 2: Attempt any THREE of the following: **12 Marks**

a)   What are the four advantages of plane table survey over chain & compass
      survey.

b)   Explain the procedure for measuring of vertical angle by using electronic
      theodolite.

c)   State and explain the principle of tachometry with neat sketch.

d) Show the following reading on windows of micro optic theodolite in measurement of horizontal & vertical angle.

1) Horizontal angle = $110^o 45'18"$

2) Vertical angle = $70^o 21'6"$

Q 3: Attempt any THREE of the following: 12 Marks

a) Explain the procedure of measurement of Deflection angle for open traverse. With neat sketch.

b) Describe the methods of prolonging a straight line with the help of transit theodolite, draw sketch for it.

c) Draw a neat sketch of a circular curve and show the following elements there on. i) Rear tangent ii) Forward tangent ii) length of curve   iv) Angle of deflection v) Length of long chard vi) Apex distance.

d) Explain the pressure of measurement of horizontal angle by method of repetition with a theodolite.

Q 4: Attempt any Two of the following : 16 Marks

a) Calculate the corrected consecutive co-ordinate and independent co-ordinates for following observation of traverse.

Line	Length (m)	Point	Consecutive co- ordinates	
			Latitude	Departure
AB	705	A	+ 655.19	-260.29
BC	952.5	B	+ 127.07	+ 943.99
CD	645	C	-628.47	+ 145.54
DA	844.5	D	-151.48	-830.80

b) A tacheometer was set up at a station A and the reading on a vertically held staff were recorded as follows. If the constants of the instrument were 100 and 0.1 find the horizontal distance from A to B and the reduced level of B.

Station	Staff Station	Vertical angle	Hair Readings	Remark
A	B.M	$-5^o12'$	1.150, 1.195, 1.225	R.L. OF B.M =
A	B	$+ 12^o O'$	1.030, 1.140, 1.250	251.400m

c)   Calculate the ordinates at 25m interval to set out a circular curve having a long chard of 300m and versed sine of 10m.

Q 5: Attempt any Two of the following: **12 Marks**

a)   After studying the following fig No 1 select the suitable method of plane tabling, explain its procedure for marking the plot of open-land.

Fig shows the closed traverse ABCDEA for open land.

Point P is instrument station.
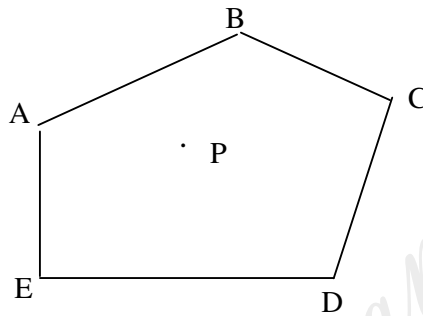
b)   After studying the following fig No 2. Calculate the bearing of line. QR, line RS, line ST + line TP.
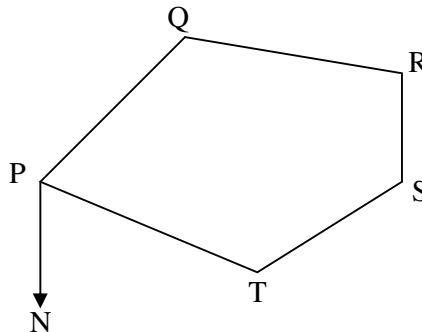
Included angles

$<P = 78^{o} 40'15"$

$<Q = 104^{o} 45'20"$

$<R = 45^{o} 35'4^{o}"$

$<S = 150^{o} 40'30"$

$<T = 120^{o} 18'15"$

Bearing of Line PQ = $220^{o}25'30"$

c)   Two distances of 45m and 120m more accurately measured out and the intercepts on the staff between the outer stadia hairs were 0.447 and 1.193 respectively. Find out Tacheomtric constants

Q 6: Attempt any THREE of the following :   **12 Marks**

a)   Give the four desired relationship between the fundamental axis of transit theodolite.

b)   Find the length and bearing of a line PQ, the co-ordinates of two points P & Q are given.

Point	Co- Ordinates
P	975.50, 830.20
Q	1189.70 , 579.30

c)   Explain the procedure of measurement of horizontal distance by electronic distacometer. (E.D.M)

d)   Give the application of remote sensing with respect to the natural hazards and that of archaeology.