Civil / III / CBGS / Surveying - I

QP Code : **NP-18746**

(3 Hours) [Total Marks : 80

(17) 09.6.14

N. B. : (1) Attempt any **four** questions.
(2) **Assume** any data, if **required** and state them **clearly**.
(3) Attempt **sub questions** in **order**.
(4) **Illustrate** answers with neat **sketches** wherever **required**.
(5) **Figures** to the **right** indicate **marks**.

1. Attempt any **five** :- 20
   (a) Explain Reciprocal Ranging.
   (b) What is offset ? Explain its types alongwith limiting length of offset.
   (c) Characteristics of contour.
   (d) Explain with neat sketch Dip and Declination.
   (e) Compare Prismatic compass and Surveyor's compass
   (f) Horizontal angle measurement by Reiteration method using theodolite.

2. (a) The following offsets were taken from a chain line to a Hedge :- 10

Distance in "m"	0	20	40	60	80	120	160	200	240	270	300
Offsets in "m"	24	20	16	12	8	10	14	16	20	22	26

Calculate the area enclosed by chain line, the hedge and the end offset by :-
   (i) Simpson's Rule
   (ii) Trapezosdal Rule

   (b) Explain why zero is marked at South in Prismatic compass ? and why East and West are interchanged in surveyor's compass. 6

   (c) Describe temperory adjustments of compass. 4

3. (a) The following bearings were observed in an open traverse; correct them where necessary for local attraction :- 8

Line	AB	BC	CD	DE
F.B.	154°	205° 40'	140°	69° 38'
B.B.	334° 40'	23° 38'	321° 22'	249° 38'

   (b) Explain Block contouring in detail. 6

   (c) Describe principle of surveying with an example. 6

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4. (a) The following notes refer to the reciprocal levels :- 8

Instrument station	Staff readings on		Remarks
	A	B	
A	1.029	1.634	Distance between A and B = 800 m.
B	0.943	1.542	Rt. of A = 421.543 m.

Find :- (i) The true RL of B, (ii) Combined corrections for curvature and refraction (iii) The error in collimation adjustment of the instrument.

(b) Explain Orientation alongwith different methods of orientation in plane table surveying. 8

(c) Define :- 4

(i) Arbitrary meridian.
(ii) True meridian
(iii) Permanent BM
(iv) Line of Collimation.

5. (a) Determine the elevations of hilltop; from following data :- 6

Instruement station	Staff reading on B.M.	Vertical angle on target at hilltop	RL of BM (m)
O_1	1.670	28° 42'	345.58
O_2	2.55	18° 6'	345.58

The height of target A was 5.0m. The instrument stations were 100 m apart and were in line with the target A.

(b) Given the following latitude and departures of the sides of traverse ABCDE, the length of CD have been omitted. Compute the length of CD for above closed traverse. Draw traverse :- 10

Sr. No.	Line	Length	Bearing	Latitude	Departure
1	AB	217.5	S 59° 45'E	-109.578	+ 187.872
2	BC	308	Due North	?	?
3	CD	?	N 37° 36'W	?	?
4	DE	283.5	S 55° 18'W	-161.397	-233.070
5	EA	173.15	S 2° 40'W	-172.989	-8.055

(c) Compare collimation method and rise and fall method. 4

6. Attempt any **four** :- 20

(a) Balancing BS and FS.
(b) Zero circle
(c) Spire test
(d) Traversing method of plane table survey
(e) Balancing of traverse

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