

INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

Date: FN/AN, Time: 2 Hrs., Full Marks: 60, Deptt.: Mining Engineering
No. of students: 73, Mid- Spring Semester Examination: 2013-14,
Subject No.: MI21002, Subject Name: Mine Surveying, 2nd Yr. B.Tech. (H),

Instruction: Group A and Group B should be answered separately.

Group A
Answer ALL Questions

Q1. Classify the different types of survey based on purpose for which it is to be conducted. [3]

Given below are the bearings observed in a traverse survey conducted with a prismatic Compass at a place where local attraction was suspected:

Line	Fore Bearing	Back Bearing
AB	124°30'	304°30'
BC	68°15'	246°00'
CD	310°30'	135°15'
DA	200°15'	17°45'

At what stations do you suspect local attraction? Find the correct bearings of the lines. [12]

Q.2(a) If the bubble tube of a level has a sensitiveness of 30" per 2 mm division, find the error in staff reading, on a vertically held staff at a distance of 150 m, caused by a bubble 2 divisions out of the centre. [5]

(b) The following readings have been taken from a page of an old level book. It is required to reconstruct the page by filling up the missing quantities, and apply the usual checks.

Station	B.S	I.S	F.S	Rise	Fall	R.L.	Remarks
1	3.125					?	B.M.
2	?		?	1.325		125.505	T.P.
3		2.320			0.055	?	
4		?		?		125.850	
5	?		2.655		?	?	T.P.
6	1.620		3.205		2.165	?	T.P.
7		3.625			?	?	
8			?			123.090	T.B.M.

[10]

GROUP B

All the questions of this part should be answered together. The numbers towards the right indicate the marks for each of the questions

- Q3. (a)** Name the different types of EDMs, based on the range and based on the nature of the wave used for the measurements, along with their respective advantages and disadvantages. [5]
- (b)** Draw a schematic diagram of Geodimeter and explain its functioning. Properly label the same for better understanding. [6]
- (c)** Explain the IUCG formula for the determination of the EDM errors and mention the utility of the same. [4]
- Q4. (a)** What do you understand by: (i) Observed quantity, (ii) Value of a quantity, and (iii) weight of a quantity? [6]
- (b)** Briefly explain the method for assigning the weights to different field observations. Write down the seven laws of weights that are assigned to different field observations. [5]
- (c)** The observations for the three horizontal angles of a triangular field are as follows:

Angle	Value
A	$20^{\circ}10' \pm 0.2$
B	$100^{\circ}40' \pm 0.1$
C	$59^{\circ}10' \pm 0.2$

Find out the probable error of the summation.

[4]
