

B.E /B.Tech (Full Time) DEGREE END SEMESTER EXAMINATION, APRIL/MAY 2011

GEOINFORMATIC ENGINEERING BRANCH

THIRD SEMESTER (Regulation 2004)

GI271 Engineering Survey I

19

Time: 3 Hours

Maximum Marks: 100

Answer All Questions

PART A – (10 X 2 = 20 Marks)

1. Differentiate Systematic Error and Accidental Error.
2. The true length of a line is known to be 500m. The line was again measured with a 20m tape and found to be 502m. What is the correct length of the 20m tape?
3. List the instruments used for setting out right angles in chain survey.
4. Define the terms: i. magnetic declination ii. Local attraction.
5. Convert following Quadrantal Bearings to Whole circle Bearings: i. S 31°36' E ii. N 5° 42'W
6. What are the merits and demerits of Plane table Surveying?
7. Distinguish between Height of Instrument method from Rise and Fall method.
8. Define the terms: i. Bench Mark ii. Mean Sea Level.
9. What are the uses of Contour map?
10. Compare Trapezoidal rule and Simpson's one-third rule.

PART – (5 X 16 = 80 Marks)

11.
 - i. Discuss the principles of Surveying. (4)
 - ii. Differentiate Plain Surveying and Geodetic Surveying. (4)
 - iii. Explain various methods of locating contours. (8)
 - 12a.
 - i. List different tape corrections applied for measured length. Explain in detail. (10)
 - ii. Explain the different methods of chaining on sloping ground. (6)
- (OR)
- 12b.
 - i. Explain various methods used for determining the width of the river. (8)
 - ii. Explain the construction and working principle of optical square. (4)
 - iii. A rectangular parcel of land of 315m X 750m to be established. A 30m chain was calibrated and found to measure 30.03m. What measurement must be laid off on the ground? (4)

- 13a. i. Following are the observed magnetic bearing of the traverse legs: (12)

Line	PQ	QR	RS	SP
FB	124°30'	68°15'	310°30'	200°15'
BB	304°30'	246°00'	135°15'	17°45'

At what stations local attraction is suspected? Determine the corrected bearings of the traverse legs and also calculate the included angle.

- ii. Differentiate Surveyor's Compass from Prismatic Compass. (4)

(OR)

- 13b. i. What is two-point problem? Describe the procedure of solving two point problem in detail. (12)

- ii. Describe two methods of orienting the plane table. (4)

- 14a. The following consecutive readings were taken with a dumpy level and 5m leveling staff on continuously sloping ground at a common interval of 15m. The first point is having an elevation of 185.275m. Rule out a page of level field book and enter the readings. Calculate (a) the reduced levels of the points by rise and fall method and (b) the gradient of the line joining the first and last point. 0.415, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405. (16)

(OR)

- 14b. i. The following notes refer to reciprocal levels taken with on level: (8)

Inst.at	Staff readings on		Remark
	P	Q	
P	1.824	2.748	Distance between P and Q = 1010m
Q	0.928	1.606	RL of P = 126.386m

Find (a) True Reduced Level of Q. (b) The combined correction for curvature and refraction.

- ii. Why balancing the back sights and foresights required in fly leveling. (4)

- iii. Discuss Profile leveling. (4)

- 15a. i. A series of offsets were taken from a chain line to a curved boundary of 15m in the following order. 0.00, 2.65, 3.80, 3.70, 4.65, 3.60, 4.95, 5.85m. (12)

Compute the area between the chain line, the curved boundary and the end offset by (a) average ordinate rule (b) trapezoidal rule and (c) Simpson's rule.

- ii. What is a Planimeter? What are the precautions to be taken while using Planimeter? (4)

(OR)

- 15b. A 400m long railway embankment is 12m wide at the formation level and has the side slope 2 to 1. The ground levels at every 100m along the centerline are given below: (16)

Distance	0	100	200	300	400
RL	204.8	206.2	207.5	207.2	208.3

The formation level of embankment is 209m. The ground is level across the centerline. Calculate the volume of earthwork.