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(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0020 Roll No.

B. Tech.

(SEM. II) EXAMINATION, 2006-07

SURVEYING & LEVELLING

Time : 3 Hours] *[Total Marks : **100***

Note : *Attempt **all** questions. Assume suitable data, if required. All questions carry **equal** marks.*

1 Attempt any **four** parts of the following : **5×4=20**

a) Describe principles of surveying with neat sketch.

b) What do you understand by indirect ranging? Describe in detail.

c) A chain of nominal length 20 m is found to be 0.20 m too long. If the computed area of a field measured with the chain is 400 ha, determine the correct area.

d) Enumerate various tape corrections. Derive an expression for correction in length for sloping ground.

e) What are the different methods of representating the scale of a map? What is the advantage of a graphical scale?

f) Illustrate different types of cross-staff?

2 Attempt any **four** parts of the following : **5×4 = 20**

a) Draw neat sketch of Surveyor's compass.

b) Explain Bowditch rule with the help of neat sketch.

c) Explain graphical method of distributing closing error.

d) Convert the whole circle bearing of $45^{o}30'$, $113^{o}40'$, $268^{o}30'$ and $355^{o}45'$ into reduced bearing.

e) Describe sources of local attraction. How will you determine whether a station is affected by local attraction error?

f) Explain temporary adjustments of a prismatic compass.

3 Attempt any **two** parts of the following : **10×2=20**

a) Explain the working of :
   (i) Clinometer, and
   (ii) Abney level with the help of neat sketches.

b) Explain the intersection and resection method used in plane table survey.

c) Explain the theory and working of a plainmeter.

4 Attempt any **two** parts of the following : **10×2=20**

a) i) What is a bench mark? Describe different types of bench mark.

   ii) What is sensitivity of a level tube? Derive a relation between the sensitivity and radius of tube.

   iii) Define : Magnification, Field of view and resolution

b) The group of figures below refer to staff readings taken with a level from instrument station A, B, C, D and E. The first and last readings in each group is B.S and F.S respectively. The backsight from station A was taken with the staff held on a B.M at 200.000 m.

i) 2.575, 0.865, 0.890, 0.415

ii) 1.650, 1.430, 0.610

iii) 1.000, 1.590, 1.115

iv) 2.430, 3.485, 3.780, 2.785

v) 2.630, 2.100, 2.290

Book the readings by rise and fall method and determine R.L of each staff station.

c) Explain cross sectioning? What is its importance? How would you draw a longitudinal section and a cross-section?

5 Attempt any **two** parts of the following : **10×2=20**

a) What is reciprocal levelling? How would you determine the correct difference of levels of two points on the opposite banks of the river.

b) Discuss the characteristics of contours? Give suitable sketches in support of your answers.

c) Explain how would you adjust the axis of bubble tube perpendicular to the vertical axis. Also, give the principle of adjustment.
