



Printed Pages : 3

AG – 123

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

**PAPER ID : 0020**

Roll No.

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### 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**
- Describe principles of surveying with neat sketch.
  - What do you understand by indirect ranging? Describe in detail.
  - 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.
  - Enumerate various tape corrections. Derive an expression for correction in length for sloping ground.
  - What are the different methods of representing the scale of a map? What is the advantage of a graphical scale?
  - 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  $45^{\circ}30'$ ,  $113^{\circ}40'$ ,  $268^{\circ}30'$  and  $355^{\circ}45'$  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.