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SF-8175

B. E. - II (Sem - IV) (Civil) Examination

May / June – 2011

Advanced Surveying

(New Syllabus)

Time : Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - II (Sem - IV) (Civil)**

Name of the Subject :

☛ **Advanced Surveying**

☛ Subject Code No. : **8 1 7 5** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Figures to the right inidcate full marks.

(3) Assume missing data suitably with appropriate remarks.

(4) Draw sketches wherever necessary.

1 Fill in the blanks. **6**

(1) The science which deals with celestial bodies is known as _____.

(2) _____ is caused by failure of photograph to stay on predetermined flight line.

(3) If the standard variation is 1" the maximum error would be _____.

(4) 1 Nautical miles = _____.

(5) Residual error of a measurement is the defference of _____.

(6) On a vertical photograph the relief displacement is always radial from _____.

2 (a) Differentiate between **6**

(i) Drift and Crab

(ii) Vertical photograph and oblique photograph.

OR

2 (a) What do you understand by a relief displacement ? Derive the equation for the in a vertical photograph.

(b) Two points P and Q having elevations of 650 m and 250 m, respectively, above datum, appear on a vertical photograph obtained with a camera of focal length of 240 mm and flying altitude of 2600m above datum. Their correlated photographic coordinates are as follows **6**

Point	**Photographic Coordinates**	
	x (cm)	**y (cm)**
P	+3.65	+2.54
Q	-2.25	+5.59

Determine the length of the ground line PQ.

3 (a) State the various types of errors and explain systematic errors. **6**

OR

(a) Explain "Laws of accidental errors."

(b) The following observations were recorded for an angle under identical conditions. **6**

142^0 20' 00" 142^0 21' 20" 142^0 21' 40"
142^0 20' 40" 142^0 19' 40" 142^0 21' 20"

Calculate

(i) Probable error of a single observation.

(ii) Probable error of a mean.

(iii) The most probable value of the angles.

4 (a) Explain the following terms. **5**

(i) Zenith and Nadir.

(ii) Celestial sphere.

(b) Attempt any three. **15**

(i) Components of GIS.

(ii) Application of GIS.

(iii) Integration of Remote sensing and GIS.

(iv) Mirror stereoscopy.

5 Attempt any three. **15**

(i) Define Techometry ? Write down the procedure for determination of tacheometric constant.

(ii) Difference between Theodolite and Techeometer ?

(iii) Explain various Traingulation Figures (systems) arith its suitability.

(iv) Explain various types of signals used in geodatic surveying.

6 Attempt any three. **15**

(i) State the salient feature of total station.

(ii) What is E.D.M. ? Discuss various types EDM instruments?

(iii) State the application of remote sensing in various fields?

(iv) Define basic principle of remote sensing and explain the procedure of working of remote sensing technique with sketch.

7 (a) Determine the distance between the instrument station P and the staff station Q from following data. **6**

- Veritcal Angle = $+5^{0}40'$
- Staff reading = 1.255. 1.860, 2.465
- Value of constant = 100 and 0.3 m
- R_L of instrument axis = 400.00 m

Also determine R_L of B.

(b) Attempt any two. **14**

(i) A tacheometer is set up at an intermediate point on a traverse course PQ and the following observation are made on a vertically held staff.

Staff Station	*Vertical Angle*	*Staff Intercept*	*Axial Hair readings*
P	+8°36′	2.350	2.105
Q	+6°6′	2.055	1.895

the instrument is fitted with an anallactic lens and the constant is 100. Compute the length of PQ and reduced level of Q. If R_L of P is 321.50 meters.

(ii) Two triangulation stations A and B are 60 kilometers apart and have elevations 240m and 280m respectively. Find the minimum height of signal required at B so that the line of sight may not pass near the ground than 2 meters. The intervening ground may be assumed to have a uniform elavation of 200 meters.

(iii) The approximate length of AC and BC were 8250.7 and 10864.7 m. From the satellite 's' at a 63.19m from the triangulation station 'c' following direction were observed.

LA = $0^0 0'00"$

LB = $72^0 55'32"$

LC = $297^0 13'02"$

Calculate the angle ACB.
