[5253]-106

T.E. (Civil)

ADVANCE SURVEYING

(2012 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
5) *Assume suitable data, if necessary.*

Q1) a) What are the different types of errors in GPS observations and explain anyone of them. **[5]**

b) Define Hydrographic surveying and enlist various objectives of hydrographic surveying. **[5]**

OR

Q2) a) Describe briefly how the soundings are located by Two Angles from the shore. **[5]**

b) Elevations of two triangulation stations A and B, 108 Km apart are 135 m and 430 m respectively. A peak C, 82 Km from station A, has an elevation of 220 m. A is a ground station. Ascertain if it is visible from B or not. Also find the minimum height of scaffolding at B, so that the line of sight has a minimum 3 m clearance anywhere. **[5]**

Q3) a) Write short note on correction for curvature and refraction observation.**[5]**

b) The following reciprocal observations were made from points A and B

Horizontal distance between A and B = 5580 m

Angle of Elevation of B at A = 1° 06' 22"

Angle of depression of A at B = 1° 01' 25"

Height of instrument at A = 1.50 m

Height of instrument at B = 1.55m

Height of signal at A = 7.00 m

Height of signal at B = 6.50 m

Find the difference of level between A and B. Take R sin 1" = 30.88m. **[5]**

OR

Q4) a) Describe briefly how the soundings are located by Two Angles from the shore. **[5]**

b) What is mean by Sounding? Enumerate different instruments required for sounding and Explain Echo Sounding. **[5]**

Q5) a) Define the term any four : **[8]**
   i) MPV.

   ii) True Value.

   iii) Residual error.

   iv) Weight of an observation.

   v) Independent quantity.

b) The angles from triangle ABC were recorded as follows. Calculate the corrected values of angles. Use method of Correlates **[8]**

   A = 70° 14' 12"   Weight – 2

   B = 53° 40' 40"   Weight – 1

   C = 56° 04' 52"   Weight – 3

Q6) a) Find the most probable values of the angles A , B and C from the following observations : **[8]**

A = 76° 42'44" with weight 4;

B = 57° 53'46" with weight 3;

C = 127° 41'35" with weight 2;

A + B = 134° 36' 34" with weight 3;

B + C = 185° 35' 27' with weight 2;

A + B + C = 262° 18' 10" ;with weight 1;

Use method of correction.

b) Describe laws of weights of an observation with help of suitable example. **[8]**

Q7) a) Explain the principal of stereoscopy in details with sketch and give conditions for aerial Photography for stereoscopy. **[9]**

b) An area of 120km × 60 km is to be covered by aerial photographs. The size of photograph 23 cm × 23 cm. The height of aeroplane above MSL is 3600m and longitudinal and side lap are 60% and 30% respectively and focal length of camera lense is 18 cm . Calculate **[9]**

i) Minimum number of photographs to cover the area

ii) The required interval between successive exposure assuming the speed of aeroplane as 120 km/hr

Q8) a) A section line AB appears to be 11.16 cm on a photograph for which the focal length is 17 cm. The corresponding line measures 2.64 cm on a map which is to a scale 1:50000.The terrain has an avg. elevation of 200 m above Mean Sea Level. Calculate flying height of aircraft, above Mean Sea Level, when the photograph was taken. **[9]**

b) What are the various methods of determining scale of Vertical photograph? **[9]**

Q9) a) Explain use of remote sensing in Civil Engg. Also Compare Arial photograph with satellite images. **[8]**

b) What is GIS? Explain in detail the component parts of GIS. **[8]**

OR

*Q10)*a) Write a note on : **[8]**

i) Atmospheric windows.

ii) Active and Passive remote sensing.

b) Explain in detail applications and limitations of GIS. **[8]**

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