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# Surveying - II
## (1080)

**P. Pages : 2**

**Time : Three Hours** **Max. Marks : 100**

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** subparts from each question OR unit.
5. Draw neat sketches wherever necessary.
6. Non - programmable calculator is allowed.
7. Assume suitable data, if necessary.

### UNIT - I

**1.** a) What is triangulation survey ? What is its object explain with neat sketch procedure of extending baseline. **10**

b) Derive the expression for the phase of signal when bright portion is bisected. **10**

c) A & B triangulation stations are 150 km a part. Elevation of A = 150 m & Elevation of B = 1500 m. Intervening object C is at a distance 70 km from A and has elevation 405 m. check whether A & B are intervisible. How much B should be raised so that line should move than 3 m above ground ? **10**

### UNIT - II

**2.** a) Explain adjustment of chain of triangles. **10**

b) Explain the terms **10**
Spherical excess, Normal equation, True value of quantity, Most probable value, Residual error, True error, Most probable error, Independent quantity, Dependent quantity, Conditional equation.

c) Mean observed angles in a spherical triangles ABC were **10**
$\angle A = 48^{o}\ 20'\ 27.2''$ weight 2
$\angle B = 68^{o}\ 17'\ 32.8''$ weight 1
$\angle C = 63^{o}\ 22'\ 15.4''$ weight 3
Length BC = 16.5 km, Assume radius of earth to be 6400 km calculate
i) Spherical excess

ii) Adjusted spherical angles
iii) Adjusted plane angles

## UNIT - III

**3.** a) Explain the procedure of carrying out field work of ground photogrammetry. **10**

b) Explain practical applications of Aerial Photography. **10**

c) An Aerial survey of a particular area is to be carried out with the following details. **10**
i) Ground area to be covered = 30 km x 12 km
ii) Scale of photography is 1 : 20,000
iii) Focal length of Camera lens = 152 mm
iv) Size of photographs = 23 cm x 23 cm
v) Speed of aeroplane = 200 km per hour.
vi) Longitudinal overlap = 60%
vii) Side lap = 25%
viii) Assume 2 photos extra for end coverage.
calculate:
i) Height at which aeroplane should fly
ii) Minimum number of photographs required to cover the area.
iii) Interval between two exposures of camera.

## UNIT - IV

**4.** a) Explain with the help of neat sketch an idealised remote sensing system. **10**

b) Write short notes on **10**
i) Remote sensing platforms
ii) Atmospheric windows.

c) Discuss briefly the development of remote sensing in India and its utility. **10**

## UNIT - V

**5.** a) Write short notes **any four** **20**
i) Soundings
ii) Objects of Hydrographic surveying.
iii) Range lines
iv) 'Weisbach triangle Method' of transferring tunnel alignment.
v) Modulation
vi) The stations & station markers in mine surveying.

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