TACHEOMETRY SURVEYING

1. What are the purpose of tacheometry surveying ?

2. Explain stadia method of tacheometry ?

3. The following observations were made using a tacheometer fitted with an analliatic lens,the

Inst. Station	Height of Inst.	Staff station	WCB	Vertical angle	Hair readings	Remarks
0	1.550	A	30°30'	4°30'	1.155, 1.755, 2.355	RL of O = 150.00
		B	75°30'	10°15'	1.250, 2.000, 2.750	

multiplying constant being 100 and additive constant is 0 and the staff held vertically

4. Calculate the distance AB and the RLs of A and B . Find also the gradient of line AB.

5. Differentiate fixed hair method and movable hair method.

6. Derive the expression for the horizontal and vertical distances in the fixed hair method when the staff is held vertically and the measured angle is that of elevation.

GEODETIC SURVEYING

*What is triangulation ? Explain principle of triangulation.

1. Explain with sketches different triangulation figures.
2. What is satellite station ? Discuss the method of reduction of horinzontal angle to corner.
3. What are the factors that affect the selection of triangulation stations ? What consideration you would have while selecting the site for the base line ?
4. There are two stations A and B at elevations of 200M AND 1000M, respectively. The distance between A and B is 100KM. If the elevation of a peak P at a distance of 300KM from A is 300M,show that stations A and B are intervisible.
5. Differentiate Plane surveying and Geodetic surveying.
6. Explain in detail corrections to base line measurements.

THEORY OF ERRORS

1. Discuss the type of errors.

2. Define the terms :

   - Independent quantity
   - Conditioned quantity
   - True value of a quantity
   - Direct observations
   - Indirect observations
   - Weight of an observation and
   - Most probable value

3. The following 10 readings were taken with a level under the identical conditions.

   1.810,1.825,1.835,1.805,1.850,1.825,1.820,1.840,1.845 and 1.835 meters. Calculate the probable error of single observation, probable error of the mean and the maximum error.

4. Explain the theory of least squares.

5. The following are the angles observed at a triangular traverse along with their probable errors. Determine correct values of angles.

   ANGLES :- A = 64°12'12'' ±02'' ,   B = 50°48'30'' ±04'' ,   C = 64°59'08'' ±05''

6. Explain "LAWS OF WEIGHTS".

FIELD ASTRONOMY

1. Discuss : How Terrestrial Lattitudes and Longitudes are determined .

2. Write short note on , Spherical triangle and Spherical excess .

3. What are the systems of co-ordinates to specify the position of celestial body . Explain any one in detail with sketch.

4. Describe various methods to determine the longitude of a place .

5.   A) The zenith and Nadir

       B) The sensible horizon

       C) The visible horizon

       D) The latitude

       E) The longitude

       F) Equinoctical points

       E) The Ecliptic

6.   Determine the azimuth and altitude of a star from the following data :

         Latitude of the observer = 48° N

         Hour angle of star   =43°

         Declination of star   =18°20'

PHOTOGRAMMETRY

1. Define the terms :
    A) Vertical photograph
    B) Tilted photograph
    C) Oblique photograph
    D) Tilt
    E) Isocenter
    F) Overlap
    G) Side lap
    H) Crab
    I) Drift .
2. Discuss in detail ,Flight planning for aerial photogrammetry .
3. To determine the average scale of an aerial photograph ,three points A, B abd C were selected . Their elevations were obtained from a contoured map as 1400m, 900m, and 1100m . If the flying height of the aircraft above mean sea level is 3500m and the focal length of camera lens is 160mm, calculate the average scale of the aerial photograph .
4. What is relief displacement ? Derive an expression for the relief displacement in a vertical photograph .
5. Write a short note on :
    A) Stereoscope
    B) Parallax bar

REMOTE SENSING

1. Define Remote sensing and discuss types of remote sensing. Differentiate passive and active remote sensing.

2. Discuss ,Interaction of electromagnetic radiation with earth surface .

3. Discuss ; spatial, spectral ,radiometric and temporal resolutions of remote sensing . Brifely discuss various operations involved in digital image processing for remote sensing.

4. Explain components of remote sensing.

5. Write a short note on global positioning system.

Modern surveying instruments

1. Briefly explain how measurement with EDM instruments differ from taping ? what are the advantages of EDM measurement ?

2. What is principle of EDM ? discuss electromagnetic waves and electromagnetic spectrum .

3. Describe how total station has brought revoluation in surveying.

4. Briefly discuss these four basic types of total staion:

   A) Mechanical/ manual TS

   B) Motorised TS

   C) Auto lock TS and

   D) Robotic / Automatic TS