



Note: Answer five Questions only

Q 1 : Explain the following:

- What are the reasons to prepare maps and plans?
- What are the three types of basic geospatial data, which are collected and coordinated?
- What are the points should be considered with respect to levels of precision?
- What are the typical commands should be created to plot file?

Q 2 :

The following table represent the error matrix of the classification map of Landsat TM data. Compute the (omission, commission error) and K_{hat} coefficient

classification	residential	commercial	wetland	forest	water	Row total
residential	70	5	0	13	0	88
commercial	3	55	0	0	0	58
wetland	0	0	99	0	0	99
forest	0	0	4	37	0	41
water	0	0	0	0	121	121
Column total	73	60	103	50	121	407

Q 3 :

A) Calculate the photo scales, given the following data: Distance between points A and B on a topographic map. Scale 1:100,000 is (5) cm, distance between same points on air photo is (15) cm?

B) State the contour lines characteristics.

Q 4 :

A) Scale distance between two points (A & B) is 0.96 unit, the difference in elevation between point A and B is 6.2 m. The difference in elevation between point A and contour line 566 is 2.7 m

- What the distance from point A to contour line 566.
- What the distance from contour line 566 to point B.

B) Summarize the main capabilities of drawing program used in computerized surveying computation and drawing preparation.

Q 5: What the scale of the map, if you know the distance between two points is 50 cm in the paper equivalent to 500 meter in the ground?. If the height of the aerial camera is 3,000 m and scale ratio=1:10,000 find the camera focal length.

Q 6:

A) Summarize the following:

- a) Most of the CAD programs have capabilities for surveying, design and drawings summary the four from these capabilities?
- b) Typical title block content many important items, summary the seven only for these items?
- c) The map scales and contour intervals, with mentioned the typical uses for each?

B) Define four of the following terms:(Remote sensing, Photogrammetry, topographic maps, Fiducial marks, Relief displacement)

1. Explain the following:

- a) What are the reasons to prepare maps and plans?
- b) What are the three types of basic geospatial data, which are collected and coordinated?
- c) What are the points should be considered with respect to levels of precision?
- d) What are the typical commands should be created to plot file?

A) Maps and plans (hard-copy and electronic) are generally prepared for one of two reasons: (1) when measured data are displayed to scale on a map or plan, the ground data are presented as an inventory or record of the features surveyed, and (2) when the presented data are used to facilitate the design of infrastructure projects, private projects, or land division, the design plan or map is used as a design and layout tool

B)

1. The horizontal position of natural and constructed features or entities.
2. The vertical position (elevation) of the ground surface or built features.
3. Attribute data describing the features or entities being surveyed.

C)

1. Some detail, for example, building corners, railway tracks, bridge beam seats, and pipe and culvert inverts, can be precisely defined and located.
2. Some detail cannot be defined or located precisely. Examples include stream banks, edges of gravel roads, limits of wooded areas, rock outcrops, and tops and bottoms of slopes.
3. Some detail can be located with only moderate precision with normal techniques. Examples are large single trees, manhole covers, and walkways.

D) Title

- Scale
- Limits (e.g., can be defined by the southwesterly coordinates, northerly range, and easterly range)
- Plot all points?
- Connect specific points (through feature coding or CAD commands)
- Pen number (various pens can have different line weights or colors; two to four pens are common)
- Symbol (symbols are predesigned and stored by identification number in a symbol library)
- Height of characters (the heights of labels, letters and numbers, coordinates, and

symbols can be defined)

A) Summarize the main capabilities of drawing program used in computerized surveying computation and drawing preparation.

- Survey data import
- Project definition with respect to map projection, horizontal and vertical datums, and ellipsoid and coordinate system
- COGO routines for accuracy determination and for the creation of auxiliary points
- Graphics creation
- Feature coding and labeling
- Digital terrain modeling and contouring, including break-line identification and contour smoothing
- Earthwork computations
- Design of land division, road (and other alignment) design, horizontal and vertical curves, site grading, etc.
- Creation of plot files
- File exports in DXF, DWG, and XML; compatibility with GIS through ESRI (e.g., Arcinfo) files and shape files

B) What the scale of the map, if you know the distance between two points is 20 cm in the paper equivalent to 200 meter in the ground?

$$\frac{20}{20000} = 1:1000$$

A) Calculate the photo scales, given the following data: Distance between points A and B on a topographic map. Scale 1:100,000 is (5) cm, distance between same points on air photo is (15) cm?

$$\frac{5}{15} = \frac{1/100000}{c}$$

$$\frac{3}{100000} = c$$

$$c = \frac{1}{33333.33}$$

B) State the Contour Characteristics.

1. Closely spaced contours indicate steep slopes.
2. Widely spaced contours indicate moderate slopes (spacing here is a relative relationship).
3. Contours must be labeled to give the elevation value. Either each line is labeled or every fifth line is drawn darker (wider) and labeled.
4. Contours are not shown going through buildings.
5. Contours crossing a built horizontal surface (roads, railroads) are straight parallel lines as they cross the facility.
6. Because contours join points of equal elevation, contour lines cannot cross. (Caves present an exception.)
7. Contour lines cannot begin or end on the plan.
8. Depressions and hills look the same; one must note the contour value to distinguish the terrain (some agencies use hachures or shading to identify depressions).
9. Contours deflect uphill at valley lines and downhill at ridge lines. Contour line crossings are perpendicular: U-shaped for ridge crossings, V-shaped for valley crossings.
10. Contour lines must close on themselves, either on the plan or in locations off the plan.
11. The ground slope between contour lines is uniform. If the ground slope is not uniform between the points, additional readings (by total station or level) are taken at the time of the survey.
12. Important points can be further defined by including a spot elevation (height elevation).
13. Contour lines tend to parallel each other on uniform slopes.

Q4) Scale distance between two points (A & B) is 0.96 unit, the difference in elevation between point A and B is 6.2 m. The difference in elevation between point A and contour line 566 is 2.7 m

- 1) What the distance from point A to contour line 566.
- 2) What the distance from contour line 566 to point B.

$$1- \frac{2.7}{6.2} \times 0.96 = 0.418$$

$$2- \frac{3.5}{6.2} \times 0.96 = 0.54$$

Q4 What the scale of the map, if you know the distance between two points is 50 cm in the paper equivalent to 500 meter in the ground?. If the height of the aerial camera is 3,000 m and scale ratio=1:10,000 find the camera focal length.

$$f = \frac{h}{sr} = \frac{3000}{10000} = 0.3$$

$$\frac{50}{50000} = 1:1000$$

A) Summarize the following:

- Typical title block content many important items, summary the seven only for these items?
- The map scales and contour intervals, with mentioned the typical uses for each?

B) Define four of the following terms:(Remote sensing, Photogrammetry, topographic maps, Fiducial marks, Relief displacement)