

6. Introduction to Aerial Photographs

Multiple Choice Questions

1. In which of the following aerial photographs the horizon appears?

- a. Vertical
- b. Near-vertical
- c. Low-oblique
- d. High-oblique

Answer: d. High-oblique

2. In which of the following aerial photographs the Nadir and the principle points coincide?

- a. Vertical
- b. Near-vertical
- c. Low-oblique
- d. High-oblique

Answer: a. Vertical

3. Which type of the following projections is used in aerial photographs?

- a. Parallel
- b. Orthogonal
- c. Central
- d. None of the above.

Answer: c. Central

Short Questions

1. State any three advantages that an aerial photograph offers over ground based observation

Answer: The basic advantages that aerial photographs offer over ground based observation are:

- i. Aerial photography provides a bird's eye view of large areas.
- ii. An aerial photograph is a record of the surface features at an instance of exposure.
- iii. The sensitivity of the film used in taking aerial photographs is relatively more than the sensitivity of the human eyes.

2. How is an aerial photograph taken?

Answer: The aerial photographs are taken from an aircraft or helicopter using a precision camera.

3. Present a concise account of aerial photography in India

Answer: Large-scale aerial photographs of Agra city were obtained in 1920. Subsequently, the Survey of India took up aerial survey of Irrawaddy Delta forests during 1923–24. Aerial photography is carried out for the entire country under the overall supervision of the Directorate of Air Survey New Delhi. Three flying agencies, i.e. Indian Air Force, Air Survey Company, Kolkata and National Remote Sensing Agency, Hyderabad have been officially authorised by the government of India to take aerial photographs of different parts of country.

4. Answer the following questions in about 125 words:

i) What are the two major uses of an aerial photograph? Elaborate

Answer: Aerial photographs are used in topographical mapping and interpretation. These two different uses have led to the development of photogrammetry. Photogrammetry is the science of making measurements from photographs. These measurements are related to the length, breadth and height from photographs. Image Interpretation is an art of identifying images of objects and judging their relative significance. A trained interpreter can utilise aerial photographs to analyse the land use pattern, topographical forms, soil types, etc.

ii) What are the different methods of scale determination?

Answer: There are three methods of scale determination of an aerial photograph.

Method 1: By Establishing Relationship between

Photo Distance and Ground Distance

If information of ground distances of two identifiable points in an aerial photograph is available, the scale of an aerial photograph will be as:

$$S_p = D_p / D_g$$

D_p - Distance between two points on an aerial photograph
 D_g - Distance between the same points on the ground

Method 2: By Establishing Relationship between

Photo Distance and Map Distance

The distances between different points on the ground are not known. However, if a reliable map is available for the area shown on an aerial photograph, it can be used to determine the photo scale. The relationship between the two distances may be expressed as:

Photo scale (S_p) = Photo distance (D_p): Map distance

(D_m) x Map scale factor (m_s)

Method 3: By Establishing Relationship between Focal Length (f) and Flying Height (H) of the Aircraft

If no information is available about the relative distances on photograph and ground/map, but the information about the focal length of the camera (f) and the flying height of the aircraft (H) are known. We can derive the photo-scale formula in the following way:

Focal Length (f): Flying Height (H) = Photo distance

(D_p): Ground distance (D_g)