SRI LANKA SURVEY DEPARTMENT

Promotion Examination from Class II - B to Class II – A of Sri Lanka

Technological Service Officers -2015

(For Aerial Photographic Technological Officers)

Aerial Photogrammetry I

2015.07.13 Time: Three (03) hours 09 00 – 12 00 hours

Answer all Questions.

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1. (i) Define the following terms concerning an aerial photograph.
   - (a) Principal point
   - (b) Nadir point
   - (c) Exposure station
   - (d) Iso centre
   - (e) Principal distance

   (10 marks)

   (ii) State the function of following parts of an aerial camera.
   - (a) Camera lens
   - (b) Diaphragm
   - (c) Filter
   - (d) Vacuum system
   - (e) Shutter

   (10 marks)

   (iii) Write-down five (05) characteristics of an aerial camera (05 marks)

2. (i) Define the terms forward overlap and side overlap of a stereopair. (05 marks)

   (ii) List-out three (03) reasons for maintaining overlaps between successive aerial photographs. (06 marks)

   (iii) Briefly explain the effect of the drift of the aircraft on aerial photographs obtained. (04 marks)

3. Write short notes on following.
   - (i) Types of aerial cameras and their uses.
   - (ii) Classification of single lens frame cameras based on angular field of view.
   - (iii) Use of vertical aerial photographs as map substitution.
   - (iv) Latitude and longitude

   (20 marks)

4. (i) Explain, why map projections are important in mapping. (05 marks)

(ii) What is the map projection used in 1:50 000 topographical mapping? (02 marks)

(iii) Give reasons for using map projection mentioned in (ii) above. (08 marks)

(iv) What are the factors that should be considered when selecting a suitable map projection for a country? (05 marks)

5. (i) Distance between two points on 1:50 000 topographical map was measured as 25mm. Calculate the distance between the same points which appear on a vertical aerial photograph that have been take with a flying height of 3000m using an aerial camera having a focal length of 150mm.

(05 marks)

(ii) The scale of an aerial photograph is 1cm = 100m. the photograph size is 20cm x20cm. Determine the number of photographs required to cover an area of 100 square km if longitudinal lap is 60% and side lap is 30%.

(15 marks)

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Promotion Examination from Class II - B to Class II – A of Sri Lanka Technological Service Officers -2015

(For Aerial Photographic Technological Officers)

Aerial Photogrammetry II

2015.07.13 Time: Three (03) hours 13 00 – 16 00 hours

Answer all Questions.

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1. Explain two types of image recording in the Aerial Surveys.

(7 marks)

b) Describe three layers in the photographic film structure.

(8 marks)

c) Define the "Sensitometry" .

(5 marks)

2. a) Explain sequence of Aerial Film processing and effect of each step.

(10 marks)

b) Define the term "Overexposure" and "Underexposure"

(5 marks)

c) What are the factors that affect to distort of image during the processing and printing of aerial film?

(5 marks)

3. a) What is meant by "Film Resolution"

(5 marks)

b) An aerial photograph is scanned using Photogrammetric scanner and scanning resolution was 300dpi. What is the pixel size in μm.

(5 marks)

c) The resolution (pixel size) of scanned panchromatic aerial image is 12.5 μm and size of the aerial image is 230mm x 230mm. What is the capacity (volume) of scanned image in mb.

(10 marks)

4. a) What is meant by "dodging" ?

(5 marks)

b) What is the Diapositive and use it in photogrammetry?

(5 marks)

c) What is film speed ?

(5 marks)

d) It is required to remove noises in scanned aerial Image. Name the best filter that can be used for this purpose? Give the characteristics of that filter.

(5 marks)

5. a) Explain the principle of Chain Surveying.

(10marks)

b) A plot of land acquired for a factory site measured 25cmx20cm on village map drawn on scale 1cm=100m. What is its area in hectares? What will be its area on a toposheet on 1:50,000 scale.

(10marks)

SRI LANKA SURVEY DEPARTMENT

Promotion Examination from Class II - B to Class II – A of Sri Lanka Technological Service Officers -2015

(For Aerial Photographic Technological Officers)

Aerial Photography & Laboratory Work - Practical

2015.07.14 Time: Three (04) hours 09 00 – 13 00 hours

Answer all Questions.

1.

(a) Prepare a Flight Plan Diagramme on 1:10,000 Photo scale for the ground area of 15km x 10km by using given 1:50,000 Topographic Map.(Consider the focal length of Aerial Camera as 150mm or 6" and size of an Aerial Photograph as 230mm x 230mm) Following also should be contained in the Flight Plan Diagramme.

(b) No of Aerial Photographs with their numbers.

(c) No of flight lines with their numbers and coordinates.

2.

There is a contact prints order for an outside customer is herewith.

(a) Complete this contact prints order with relevantstandards.

(b) Prepare a short technical report about this printing.

3.

There is a Film Positive order for an outside customer is herewith

(a) Complete this Film Positive order with relevant standards.

(b) Prepare a short technical report about this printing.

4.

There is a Digital image order for an outside customer is herewith.

(a) Complete this Digital image order according to the customer requirementsand copy to a CD

(b) Calculation used for completion should be described.