SURVEY DEPARTMENT OF SRI-LANKA

Examination for Promotion from Class II "A " to Class I of SLTS , April 1999

(For Aerial Photographers / Photo Lab Technicians)

Subject : Aerial Photography I

1999-04-24 0900 -1200 hrs.

Time: Three (03) Hours Answer All Questions

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(1). a). Explain following components of the aerial camera.

i. The lens
ii. The shutter
iii. The diaphragm
iv. Relative aperture (f-number)

(08 marks)

b). i. What is meant by resolution of optical system in aerial camera ?
ii. How can it be measured ?

(12 marks)

(2). a). Describe the meaning of "Characteristic Curve " for a particular photographic material.

(08 marks)

b). i. What is the necessity of determining a film speed ?

ii. If the film sensitivity is 200 ASA (American Standard Association) what should be the shutter speed ?

iii. Explain the relationship between film speed and size of emulsion grain (Silver Halide).

iv. What is the relationship between film resolution and size of emulsion grain ?

(12 marks)

(3). a). What are the factors that contribute to photographic image quality ?
b). What are the physical requirements of photographic film ?
c). What are the factors that affect the dimensional stability of photographic film?
d). What are the factors affecting the resolution of a photographic emulsion ?

(20 marks)

(4). a). Explain the basic differences between a rectified and perspective photo.
b). What are the optical conditions to be fulfilled in optical rectification ? Explain these briefly .

(20 marks)

(5). a). What is meant by image contrast ?
b). "Image Contrast is reduced by the atmospheric haze " Explain.
c). How do you minimize the atmospheric haze effect in the image contrast ?

(20 marks)

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Examination for Promotion from Class II "A " to Class I of SLTS - April , 1999

(For Aerial Photographers / Photo Lab Technicians)

Subject : Aerial Photography II

Time Three (03) Hours 1999-04-24 1300 -1600 hrs

Answer All Questions

(1.) Explain the following terms used in photography.

i. Drift angle
ii. Magnetic Bearing
iii. Crabbing of photography
iv. Panchromatic film
v. False colour film

(15 marks)

(2.) a.) State three different types of image motion and explain as to how these happens briefly .

b.) Give two methods to minimise forward image motion.

c.) If photo scale factor is 20 000, exposure time is 1/200 sec and image motion is 0.02 mm, find speed of the aircraft.

(20 marks)

(3.) An area 30 km long in the N-S direction and 24 km in the E-W direction is to be photographed with a lens having 300 mm focal length for the purpose of constructing a mosaic. The photograph size is 200 mm x 200 mm. The average scale is to be 1: 12000 effective at an elevation of 400 m above mean see level. Forward overlap is to be 60% and the side lap is to be 30%. The ground speed of the aircraft will be maintained at 200 km per hour. The flight lines are to be laid out in a N-S direction on an existing map having a scale of 1:60000. The outer flight lines are to coincide with the east and west boundaries of the area.

Determine the following.

i. Flying height
ii. Ground spacing of flight line.
iii. Number of flight lines required.
iv. Spacing flight lines on flight map.
v. Ground distance between exposures.
vi. Exposure interval.
vii. Number of photographs per flight line.
viii. Total number of photographs requires to cover the area.

(30 marks)

(4) a.) Name and describe the three well-known classes of map projection.

b.) What are the differences between conformal and equidistant properties in map projection?

c.) What is the map projection used in the Survey Departmental maps ?

d.) The scale factor for a 1: 25 000 topographic map sheet is found to be 0.9990. Two points P and Q are found to be 40cm apart on the map. What is their distance apart on the ground?

(20 marks)

(5.) a.) The unit of pressure is Nm^{-2} (i.e. Pascal). The unit of air pressure is normally indicating in milibars. What is the relationship between unit Pascal and milibars?

b.) " The atmospheric pressure at a certain point far above the earth surface is higher than a point close to the surface of the earth." Is that statement is true or false. Explain your answer.

(15 marks)