

KATHMANDU UNIVERSITY
End Semester Examination [C]
June, 2018

Marks Scored:

Level : B. E.

Course : GEOM 316

Year : III

Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

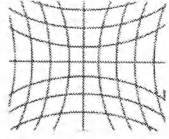
Registration No.:

Date JUN 17 2018

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Choose the most appropriate answer among the given options. The symbols have usual meaning.

1. Which of the following is False on principle of Photogrammetry?
 - a) There must be no deviation of light rays passing through the lens of the camera.
 - b) It uses central projection.
 - c) It uses principle of collinearity.
 - d) The image medium at the focal plane of the camera must be a non-planar surface.
2. Line passing through the optical center and front and rear nodal points is known as _____.
 - a) Camera Axis
 - b) Optical Axis
 - c) Plumb Line
 - d) Vertical Line
3. _____ determines Pixel size on image.
 - a) Flying Height
 - b) Speed of the aircraft
 - c) Sensor Size
 - d) Overlap percent
4. Which of the following is False about Aerial photograph?
 - a) Scale varies due to relief displacement
 - b) Scale varies due to tilt displacement
 - c) Provides precise coordinate reference
 - d) The user has to interpret the photograph
5. In which of the following scenario, camera axis coincides with plumb line?
 - a) Near vertical photograph
 - b) True vertical photograph
 - c) Low oblique photograph
 - d) High oblique photograph
6. If focal length of camera is 15.24mm, flying height is 2000m AGL and lowest point in the mapping area is 570m, the scale of the photograph will be _____.
 - a) 9000
 - b) 10000
 - c) 6500
 - d) 13000
7. With respect to the datum, the displacement is outward for the points whose elevation are _____ and inward for the points whose elevation are _____ the datum.
 - a) Above and below
 - b) Below and above
 - c) Below and below
 - d) Above and above
8. For the same number of pixel per image, which of the following holds true?
 - a) Smaller the size of CCD, clearer is the image.
 - b) Larger the size of CCD, clearer is the image.
 - c) Image quality is independent of the CCD size.
 - d) Smaller the size of CCD, smaller is the focal length of the camera.
9. Lens with focal length 90mm can be termed as _____.
 - a) narrow angle lens
 - b) normal angle lens
 - c) wide angle lens
 - d) super wide angle lens



10. _____ represents _____.
- a) positive radial distortion b) barrel distortion
c) tangential distortion d) pincushion
11. Which of the following statement is true?
- a) With binocular vision, when eyes are focused at an object, the optical axis of both eyes diverges.
b) The angle made at the point of intersection is called optical angle.
c) Nearer the object, greater the parallactic angle.
d) The optical axes of two eyes are separated by a distance called “base eye”.
12. _____ is _____ lens.
- a) Plano-convex b) Plano-concave c) Positive meniscus d) Negative meniscus
13. Difference in Parallax in aerial photogrammetry can be used to determine _____.
- a) Elevation b) Change in elevation
c) Easting d) Northing
14. Pick up the false statement.
- a) Illuminance is directly proportional to the amount of light passing through the lens opening
b) Illuminance is directly proportional to the area of opening
c) Illuminating area is directly proportional to image distance
d) Illuminance is directly proportional to illuminated area
15. When white light passes through Yellow and Magenta filters before reaching sensor, _____ light is recorded in the sensor.
- a) Red b) Blue c) Green d) Black
16. _____ determines position and orientation of an image in space.
- a) Block adjustment b) Triangulation
c) Resection d) Intersection
17. If four fiducial marks are measured on a photograph, _____ transformation can be used for the correction of film deformation.
- a) Similarity b) Affine c) Projective d) Helmert
18. Relative orientation determines _____ parameters.
- a) 5 b) 6 c) 7 d) 12
19. Close-Range Photogrammetry does not use _____ algorithm.
- a) BBA b) SIFT c) SURF d) CSIFT
20. For production of high accuracy DTM of large area with moderate budget _____ technique is appropriate.
- a) Field Surveying b) Photogrammetry c) LiDAR d) Map Scanning

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F. M. : 40

SECTION "B"

[6 Q × 4 = 24 marks]

Attempt *ANY SIX* questions. Each question carries equal marks.

1. Describe area-based image matching in detail with necessary diagrams.
2. Compare monoplottting and stereo restitution methods of feature extraction.
3. Briefly describe the following Influencing factors for the production of Orthophoto.
 - a. Accuracy of image orientation
 - b. DTM accuracy
4. Compare Pre- and post-pointing methods of GCP placement with their advantages and disadvantages.
5. How can height of a building be estimated from an aerial photograph? Illustrate with an example.
6. How can parallax be used to estimate height of a tower? Explain with an example.
7. Write short notes on:
 - a. Spatial Resolution
 - b. Spectral Sensitivity of emulsion

SECTION "C"

[2 Q × 8 = 16 marks]

Attempt *ALL* questions. Each question carries equal marks.

8. Derive Collinearity equation. Aerial photography with 60% forward overlap and 30% side overlap is required for a mapping project. The focal length is 152.4mm and the desired image scale is 1:4000. What is the spacing between exposures along the flight line? Assume data if necessary.

OR

Explain Block Adjustment by Independent Models. A ray of light travels from glass with a refractive index of 1.35 into air, with refractive index of 1. At what angle of incidence will total reflection occur?

9. What is image rectification? What is the purpose for using differential rectification? Explain differential rectification process in detail with necessary diagrams.

