

KATHMANDU UNIVERSITY  
End Semester Examination  
June/July, 2023

Level : B.Arch.  
Year : IV  
Time : 2 hrs. 30 mins.

25 JUN 2023  
Course : ARCH 425  
Semester: II  
F.M. : 40

SECTION "B"  
[5Q. × 4 = 20 marks]

Attempt *ALL* questions. Assume suitable data if necessary.

1. Briefly describe Internal Orientation in Photogrammetry.

**OR**

Suppose If we have a small hand-held stupa and we want to create 3d Model of it using some Photogrammetric software. can we rotate the stupa fixing the camera during image acquisition process? How should we acquire image for 3d reconstruction? Explain briefly.

2. What is the objective and the concept of collinearity equation? Explain with suitable diagram.
3. What is Orthophoto? How is it significant for an Architect person?
4. Why is the documentation process done digitally for heritage? In the process of documentation, why is the role of a conservation architect more prominent over other profession?
5. How should documentation records be kept and identified?

**OR**

What are the six phases of the built heritage conservation process as defined by the practitioners?

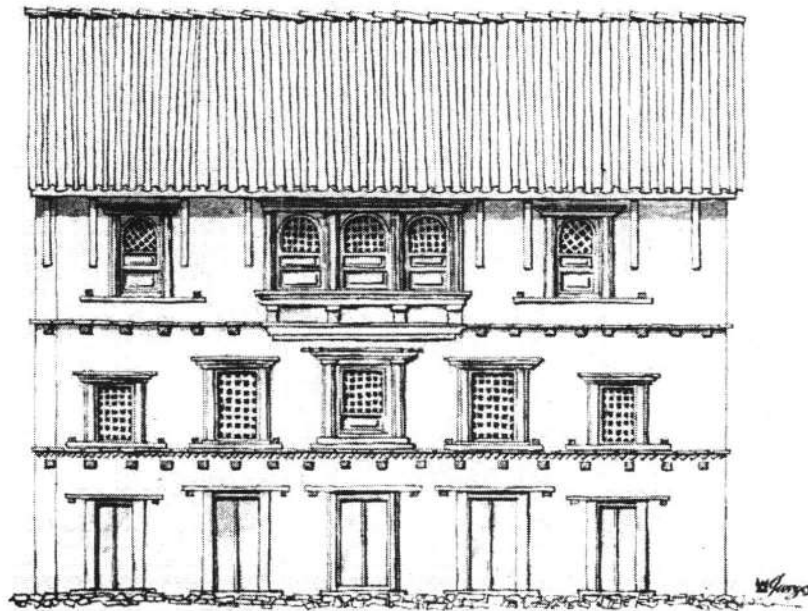
SECTION "C"  
[2 Q × 10 = 20 marks]

Attempt *ALL* questions.

6. What is the basic Principle of Photogrammetry? What are the results of photogrammetric analysis? What are stereo pair in stereo photogrammetry? What are the methods of judging depth in stereo photogrammetry? What is the strategy to place control point in photogrammetry? What happen if we do not have control point in structure from Motion (Agisoft Metashape software)? [2+2+1+3+1+1]
7. The context of digital building survey is different in urban and rural. What are the selection and implementation of measurement method in two different cities of Nepal, for example in rural context of Dolpo and in the urban context of Kathmandu. What are the different objections, obligations and objectives in two contexts? Explain briefly. [4+2+2+2]

**OR**

On the basis of practical session work at Ta: Bahal in Lalitpur, please describe the full procedure of doing Structure from Motion (SfM) approach for building's 3D reconstruction. How it's byproduct are useful to interpretation of any vulnerable structure which has heritage importance from the past. How the modern software like Agisoft Metashape and traditional handmade drawings can together be fuse together for making the record of those kinds of structures. [6+2+2]



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Mark Scored:

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F.M. : 10

25 JUN 2023

Registration No.:

Date:

SECTION "A"

[20Q. × 0.5 = 10 marks]

**Encircle the most appropriate option.**

1. What do not Total station measures?
  - a. Horizontal Angle
  - b. Vertical Angle
  - c. Slope Distance
  - d. X, Y, Z coordinate
2. What is not the component of Exposure triangle in Photography?
  - a. Focal length
  - b. Shutter Speed
  - c. Aperture
  - d. ISO
3. What do camera measure?
  - a. Intensity of light
  - b. Direction
  - c. both a and b
  - d. none
4. Depth of field in photography is controlled by
  - a. Shutter Speed setting
  - b. ISO setting
  - c. Aperture setting
  - d. All of these
5. What do spatial resection in photogrammetry solve?
  - a. Internal orientation
  - b. External orientation
  - c. Object point coordinate
  - d. Image point coordinate
6. Aim to Sketch drawing in the site is to
  - a. Understand the critical conditions that has not been reflected in orthophoto.
  - b. Engage every person in a work.
  - c. Helps for the construction drawing.
  - d. Improving the quality of drawing.
7. Based on binocular vision we can perceive depth between the object due to
  - a. Relative Size of the object
  - b. location of the object
  - c. Parallax angle
  - d. Shade and Shadows
8. In stereo normal case of photogrammetry two cameras has
  - a. Same position
  - b. Same orientation
  - c. both a and b
  - d. None of these
9. How many collinearity equations do we have in photogrammetry?
  - a. 2
  - b. 4
  - c. 3
  - d. 6

10. Traditionally Physical parameter of internal orientation is derived during:
  - a. Camera calibration
  - b. Dense Point Cloud generation
  - c. Orthophoto generation
  - d. Tie point generation
11. Objective of overlapping images in photogrammetry is to
  - a. obtain sufficient object's tie points.
  - b. increase the number of images.
  - c. get good quality of images.
  - d. enlarge the object's details.
12. In stereopair image position of same object appear in different position, which is known as parallax. What do we measure with this parallax?
  - a. x-Parallax of the object
  - b. Height of the object
  - c. y-Parallax of the object
  - d. Relief Displacement
13. Structure from Motion starts with
  - a. Feature deleting
  - b. Feature matching
  - c. Feature description
  - d. Feature detection
14. Process of understanding of building's characteristics and their appropriate graphical and visual documentation, through the analysis, selection, synthesis and representation of the ..... characteristics.
  - a. Mechanical
  - b. Infrastructural
  - c. Architectural
  - d. Surveying
15. As soon you visit the workstation for the documentation work, the first task you do is
  - a. Laser Scanning
  - b. Damage assessment
  - c. Lidar Documentation
  - d. Preliminary Investigation
16. Levelling pipe is used in the site for
  - a. marking the vertical reference
  - b. marking the horizontal reference
  - c. marking the diagonal reference
  - d. counting the bricks
17. Plumb bob is used to transfer the specified point from .....
  - a. Top
  - b. Left
  - c. Right
  - d. Bottom
18. When using a laser scanner, a tremendous quality of ..... data can be captured
  - a. High quality
  - b. Raw survey
  - c. Images
  - d. Triangulation
19. How should the historical records should be kept and identified?
  - a. Standardized format
  - b. Be preserved in safe and accessible place
  - c. Most current version of software updated
  - d. All of above
20. The full form of BIM is
  - a. Building Information Modelling
  - b. Built in Model
  - c. Bye-laws inside Monuments
  - d. Building Including Monuments