UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
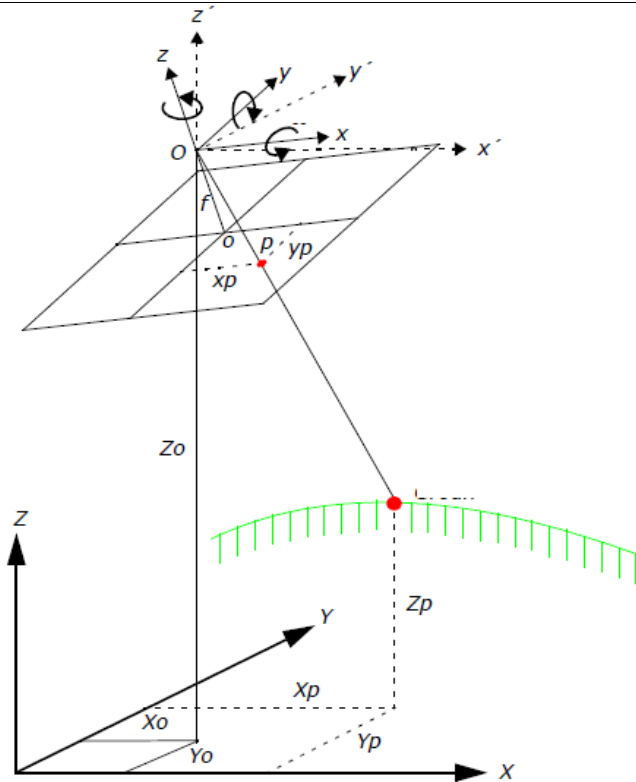## End Semester Examination, May 2022

Course: Digital Photogrammetry   **Semester: VI**
Program: B.Tech GIE   **Time   : 03 hrs.**
Course Code: PEGI 3001   **Max. Marks: 100**

Instructions: All questions are compulsory. However, there is internal choice in some question

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	The area of a lake is 52.2 cm^2 on a 1:7500 vertical photograph. Find the ground area of the lake.	4	CO1
Q 2	Define GCPs and check points	4	CO1
Q 3	Evaluate the key parameters of exterior orientations	4	CO1
Q 4	Explain the term image parallax	4	CO1
Q 5	Define relief displacement and its importance	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 6	Correlate ground coordinate system with image coordinate system with suitable sketch diagram	10	CO2
Q 7	Evaluate the relevance of exterior orientation with labelling on given figure below	10	CO2

Q 8	Explain sideway and adjacent overlapping in aerial photograph. A camera equipped with a 152-mm-focal-length lens is used to take a vertical photograph from a flying height of 2780 m above mean sea level. If the terrain is flat and located at an elevation of 500 m, what is the scale of the photograph?	10	CO3
Q 9	Explain the concept of bundle block adjustment method in the processing of more than two stereo images. **OR** How collinearity equation is used to define the relationship between camera/sensor, the image and the ground?	10	CO4

SECTION-C
(2Qx20M=40 Marks)

Q 10	Explain the phenomena of Parallax displacements on overlapping vertical photographs. The length of line AB and the elevation of its endpoints, A and B, are to be determined from a stereopair containing images a and b. The camera used to take the photographs has a 152.4-mm lens. The flying height was 1200 m (average for the two photos) and the air base was 600m. The measured photographic coordinates of points A and B in the "flight line" coordinate system are x_a =54.61 mm, x_b = 98.67 mm, y_a = 50.80 mm, y_b =25.40 mm, x'_a = 59.45 mm, and x'_b =27.39 mm. Find the length of line AB and the elevations of A and B.	20	CO3
Q 11	How airborne GPS help in collecting GCPs? Develop a model to orthorectify an images acquired from airborne digital camera	20	CO4

	OR Evaluate in detail on various steps of orthorectification of images from Pushbroom sensors		