UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination May 18, 2021

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

SECTION A

S. No.		Marks	CO
Q 1	**True or false (Each question carry one mark):** a. Supplemental horizontal and vertical control points are establish by aerotriangulation. (T/F) b. Both geocentric and local vertical coordinate systems can be use in photogrammetry. (T/F) c. In space resection for determining the position and orientation of a tilted photograph a minimum of 4 X Y Z control points are require (T/F). d. Epipolar geometry is one method of blunder detection. (T/F) e. Rotation and scale of stereo model are corrected by absolute orientation. (T/F)	5	CO3
Q2	**Fill in blank space(s) (Each question carry one mark):** a. **……………….** is use for photogrammetric processing in digital photogrammetric system. b. 2nd order photogrammetric plotting instrument has planimetric positional accuracy of ------------------ micro m. c. Satellite ----------------data is require for digital ortho-image generation d. Cartosat – 2 uses ----------- method for photogrammetric processing. e. Interior orientation is also known as --------------------	5	CO5
Q3	**Multiple choice with single answer:** A pair of overlapping vertical photographs was taken from a flying height of 1000 m above sea level with a 150 mm-focal-length camera. The air base was 400 m. With the photos properly oriented, flight-line coordinates for points *a* and *b* were measured as $xa = 50$ mm, $ya = 51$ mm, $xa' = -40$ mm, $ya' = 52$ mm, $xb = 90$ mm, $yb = -50$ mm, $xb' = -7$ mm, $yb' = -45$ mm. Calculate the elevations of points *A* and *B* and the horizontal length of line *AB*. a. 333.3m, 381.4m, 440.5m b. 330.3m, 375.4m, 400.5m c. 333.3m; 381.4m, 457.5m d. 300.3m, 381.4m, 435.5m	5	CO2
Q4	**True or false (Each question carry one mark):** a. SMAC technique is use for determination of principal point coordinates and focal length of camera. (T/F) b. Image / photo parallax found in perpendicular to the direction of flight line. (T/F) c. High Y parallax in stereo photo pair causes difficulty in stereoscopic viewing. (T/F) d. Imaging with tilt angle more than 5 degree, atmospheric refraction correction is require. (T/F) e. CCD sensor causes image distortion due to electrical signal timing issues. (T/F)	5	CO1

Q5	**True or false (Each question carry one mark):** a. UTM projection is proper for areas of limited extent in east – west, but with long extent in north – south. (T/F) b. Systematic errors of camera interior geometry can be corrected by SEBA (T/F) c. Taylor's theorem is use for linearization of collinearity equation. (T/F) d. Differential leveling is use for establishment of horizontal control. (T/F) e. Cartosat -2 collects stereo image cross track mode. (T/F)	**5**	**CO4**
Q6	**Multiple choice with single answer:** A tilted photo is taken with a 150 mm-focal-length camera from a flying height of 2200 m above datum. Tilt and swing are 2.00° and 200°, respectively. Point *A* has an elevation of 430 m above datum, and its image coordinates with respect to the fiducial axis system are $xa = -70$ mm and 80 mm. What is the scale at point *a?* a. 1: 13.065 b. 1: 12.065 c 1: 11.065 d. 1: 14.065	**5**	**CO2**
	SECTION B		
	Instructions: Write short notes / Describe briefly		
Q 7	Write the differences between aerial and satellite photogrammetry. Describe the method of computation of ground horizontal coordinates of a tie point from stereo aerial photographs with known external orientation parameters.	**4 + 6**	**CO1**
Q 8	What is the basis of collinearity equation and what are difference between collinearity and coplanarity equations. With illustration derive collinearity equation based on similar triangles principle.	**4 + 6**	**CO2**
Q 9	You are provided with a pair of stereo aerial photographs, describe with empirical relationships and illustrations computation of ground horizontal and vertical coordinates of a point located in both stereo photographs.	**10**	**CO3**
Q 10	Write short notes on earth surface reference system use in lat. and long. Coordinate system. List five differences between digital photogrammetry and conventional photogrammetry. Describe software functionalities requirement of digital photogrammetry.	**4 + 3 + 3**	**CO5**
Q 11	In terrestrial photogrammetry, explain with empirical relationships and diagrams, the methods of computation of angle of inclination of camera axis, horizontal and vertical angles using collected images.	**6 + 4**	**CO6**
	SECTION-C		
Q 12	Discuss in details the advantages and methodology of preparation of most accurate mosacing of stereo pairs of digital images of an area. Explain the concept of modification of collinearity equation of aerial photogrammetry applicable to satellite photogrammetry. OR Describe in details approach use in identification of conjugate points in digital stereo pair images. Discuss the usefulness of orthoimage and approach of differential rectification.	**15 + 5** **12 + 8**	**CO4**