Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2018

Programme Name: B. Tech. GIE **Semester : V**
Course Name : Digital Photogrammetry **Time : 02 hrs.**
Course Code : GSEG 311 **Max. Marks: 100**
Nos. of page(s) : 2
Instructions:

	SECTION A	**30 Marks**	
S. No.		**Marks**	**COs**
Q 1	Write short notes on classification of imaging devices based on image capturing modes. Describe requirements of stereoscopic photographs.	**4 + 4**	**CO2**
Q 2	List sources of errors in measured photo coordinates of objects in aerial photograph. Describe briefly the method of correction of lens distortions in modern mapping camera.	**4 + 4**	**CO1**
Q 3	Explain with diagram the derivation of relationship for estimation of elevation of object using aerial stereo pair photographic parallax difference.	**7**	**CO1**
Q 4	With diagram, the derive relationship for estimation of scale of tilted photograph.	**7**	**CO1**
	SECTION B	**45 Marks**	
Q 5	With figure derive the empirical relationship for measurement of relief displacement on a vertical photograph. Write short note on estimation of object height based on shadow length.	**10 + 5**	**CO1**
Q 6	Explain with illustrations Collinearity and Coplanarity conditions in photogrammetry. Derive collinearity equations used in photogrammetry based on principle of similar triangles principle.	**10 + 5**	**CO3**
Q 7	Differentiate Digital Photogrammetric System vs. conventional instrumental photogrammetric system. Discuss in details methods of establishment of ground control points in photogrammetric analysis	**7 + 8**	**CO6**
	OR		
	Write various purposes of aerial triangulation. Discuss with diagram semi analytical method of aero-triangulation.	**5 + 10**	**CO4**
	SECTION-C	**25 Marks**	
Q 8	Discuss in details modified collinearity equations used for space borne stereo imagery. Define digital orthophoto / orthoimage and write briefly various approaches of implementation of algorithms for digital orthophoto / orthoimage generation	**15 + 10**	**CO6**
	OR		
	Discuss in details various steps of hierarchical method of image matching	**25**	**CO5**

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	SECTION A	**30 Marks**	
S. No.		**Marks**	**COs**
Q 1	Give a brief account on methods of pseudo-stereoscopic view of imagaes.	**8**	**CO2**
Q 2	Write comparative analysis statements in tabular form between different kinds of aerial photographs with respect to spectral range; relative cost; ability to map (lithology, geology structure, vegetation); haze effect and terrain moisture sensivity	**8**	**CO1**
Q 3	Explain with illustrations estimation of scale of an aerial photograph in flat and undulating terrain based on lens focal length – flight height relationship.	**7**	**CO1**
Q 4	Write short notes on accommodation and convergence in binocular vision of stereo photographs. List the steps of Digital Photogrammetric analysis work flow.	**4 + 3**	**CO4**
	SECTION B	**45 Marks**	
Q 5	Discuss the principle of parallax in photogrammetry and mathematical derivations for height estimation of landscape features using parallax in stereo photographs	**5 + 10**	**CO1**
Q 6	Write short note on purposes of aero-triangulation in photogrammetry. With illustration, derive collinearity equations used in photogrammetry based on principle of similar triangles principle.	**5 + 10**	**CO4**
Q 7	Write with notation modified collinearity equation for space borne stereo imagery. Discuss in details methods of establishment of ground control points in photogrammetric analysis.	**5 + 10**	**CO5**
	OR		
	With illustration, explain various stereo satellite acquisition systems. Discuss concept and method of exterior orientation used in stereo photogrammetry analysis	**5 + 10**	**CO3**
	SECTION-C	**25 Marks**	
Q 8	Discuss in details inputs, outputs and major steps followed for rigorous methods of space resection and intersection in Digital satellite photogrammetry	**25**	**CO6**
	OR		
	Discuss in details bundle adjustment method of aero-triangulation in photogrammetry.	**20 + 5**	**CO4**