Name:

Enrolment No:

UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Photogrammetry & Remote Sensing (PEGI 2002) **Semester: IV**

Programme: B.Tech (GeoScience Engg.)

Time: 03 hrs. **Max. Marks: 100**

Instructions: Answer any TWO questions from Section C

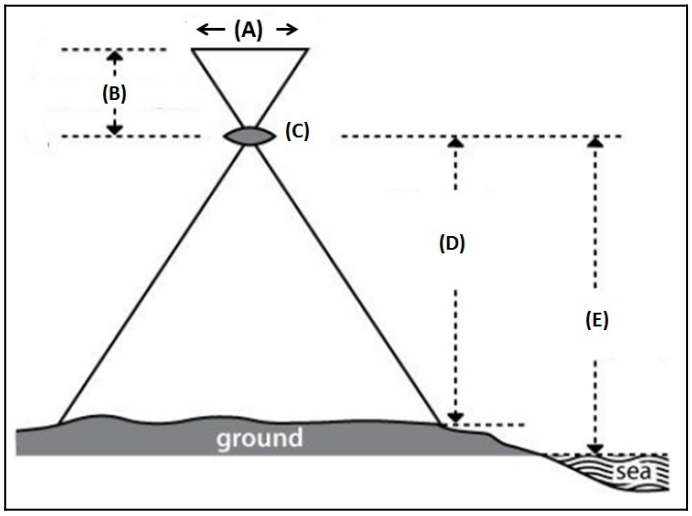
SECTION A

S. No.		Marks	CO
Q 1	List the basic differences between photogrammetry and remote sensing	4	CO1
Q 2	Differentiate between Point operations and local operations.	4	CO1
Q 3	What are Fiducial marks and their significance?	4	CO1
Q 4	Briefly describe Principal component analysis and the reasons of performing a PCA.	4	CO4
Q5	Differentiate between Average filters and Median filters.	4	CO4

SECTION B

Q 6	a) If the distance of a line on the photograph is known as 1 cm, what is its equivalent distance on the ground if the photograph scale is 1:10000	2	CO5
	b) Given below is a Contigency table for different classes. i. Calculate the Producers Accuracy for Forest. ii. Calculate the User's Accuracy for Corn. iii. Calculate the Overall Accuracy.	6	CO4
Q 7	a) You measure the straight length of a track to be 2.5 mm and you know that the real ground distance is 100 meters, what is the scale of the photo?	4	CO5
	b) An aircraft was flying at an altitude of 25000 feet above the ground and takes a vertical aerial photograph of an object which is 30 meters in height. The image of the object is at a distance of 6 inches from the nadir point. Calculate the relief displacement?	4	CO5
Q 8	There are many different ways to enhance satellite imagery. Explain linear and histogram	8	CO4

Classified Data	Reference Data						
	Water	Sand	Forest	Urban	Corn	Hay	Row Total
Water	480	0	5	0	0	0	485
Sand	0	52	0	20	0	0	72
Forest	0	0	313	40	0	0	353
Urban	0	16	0	126	0	0	142
Corn	0	0	0	38	342	79	459
Hay	0	0	38	24	60	359	481
Col Total	480	68	356	248	402	438	1992

	equalization contrast stretching.		
Q 9	Describe the process of Convolution Filtering with figures.	**8**	**CO4**
Q 10	Classify the different types of photographs as used in photogrammetry summarizing their main characteristics. Draw relevant diagrams.	**8**	**CO5**
SECTION-C (Answer and TWO questions)			
Q 11	a) Label all the parts in the following figure.  	**5**	**CO5**
	b) Explain relief displacement? What are certain causes leading to relief displacement?	**5**	**CO5**
	c) Explain the term Band Rationing? Describe its importance as an image transformation technique with a suitable example?	**2+8**	**CO3**
Q 12	a) Elaborate on the concept of scale in aerial photographs. How is the scale used to make measurements of objects in the aerial photographs	**10**	**CO5**
	b) Show, with the aid of a diagram and relevant calculations, how histogram equalization changes the distribution of pixel values in a histogram. You may choose any arbitrary values for frequencies limited to just 8 grey values.	**10**	**CO4**
Q 13	a) Differentiate between supervised and unsupervised classification? Also explain the advantages/ disadvantages of both types.	**5+5**	**CO4**
	b) Describe the local operations performed during image enhancement, describing the different types of filters?	**10**	**CO4**