Name: Enrolment No:	UPES

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

Course: Remote Sensing (ECEG 2005) **Semester: IV**
Programme: B.Tech (GeoInformatics Engg.)
Time: 03 hrs. **Max. Marks: 100**
Instructions: Question 12 has an internal choice.

SECTION A

S. No.		Marks	CO
Q 1	a) What do you mean by salt and pepper noise? b) Why do you always have a filter with only odd number of pixels such as 3X3, 5X5,7X7	2 + 2	CO1
Q 2	Explain Density slicing as a technique for Image enhancement.	4	CO4
Q 3	Describe the various types of scattering?	4	CO1
Q 4	List the different sources for obtaining digital elevation data?	3+1	CO1
Q5	A higher threshold value of flow accumulation raster will result in a less dense stream network and vice-versa. Why? Illustrate your answer with suitable figure?	4	CO5
	SECTION B		
Q 6	a) What is Flow-Direction and how is a Flow direction raster encoded in ArcGIS? Draw a suitable diagram?	2+2	CO5
	b) Differentiate between a DEM and a DSM	2+2	CO1
Q 7	a) Define the term spatial frequency. In an Image where do you expect high spatial frequency.	2	CO4
	b) Describe the common classifiers in Supervised classification	6	CO3
Q 8	Define spatial filtering? Describe the image convolution process with suitable diagrams.	2+6	CO4
Q 9	Accuracy assessment is a very important step to the classification process. What is the difference between training and test reference data? How do you use it to calculate overall, producers, and user's accuracy?	8	CO4
Q 10	Explain band rationing and its uses with example. Draw a suitable diagram to illustrate the concept?	8	CO4
	SECTION-C		
Q 11	a) Distinguish between low pass filters and high pass filters?	5	CO4
	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.	15	CO4
Q 12	a) With a relevant flowchart, differentiate and explain the steps involved in supervised and unsupervised classification.	10	CO3
	b) What is Edge Enhancement? With the help of a diagram containing input image pixel values and suitable filter values, show how you would distinguish between areas with	10	CO4

	no variation in gray level values and areas with variation.		
	OR		
	Describe all the steps involved in hydrological modelling using ArcGIS. Also draw a systematic flowchart to represent the process. **20 marks**	**15 + 5**	**CO5**