

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2020

Programme Name: B.Tech ASE+AVE
Course Name : Digital Image Processing
Course Code : ECEG 3016
Nos. of page(s) : 03

Semester : VII
Time : 03 hrs
Max. Marks : 100

SECTION A
[5x6=30]

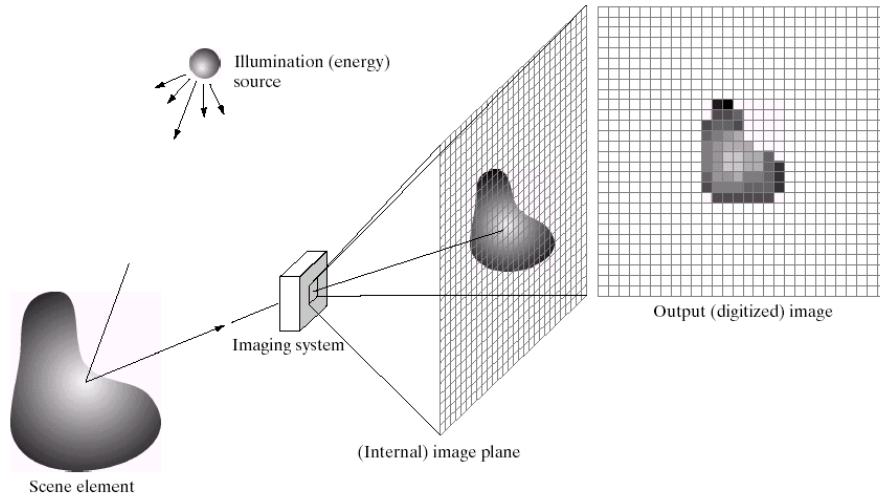
Type the Answers

S. No.		Marks	CO
Q 1	List various applications of Digital Image processing in Defense, biomedical and other engineering fields.	5	CO1
Q 2	Discuss atleast five different noise reduction algorithms.	5	CO2
Q 3	How Synthetic Aperture RADAR data image formations takes place while it gathers the information for the Earth Observations.	5	CO 3
Q 4	Name at least two software through which the image processing could be handled in tif and tagged file images.	5	CO 4
Q 5	Why the images processed diagonally?	5	CO1
Q 6	Define convolution theorem for Digital Number theory explanation.	5	CO4

SECTION B
[10x5=50]

Scan and upload

Q 7	Discuss the mathematical modelling equations and the definitions of Gaussian and Laplacian filtering.	10	CO2
Q 8	Define and Explain the Sharpening filter with the mathematical model	10	CO 3
Q 9	Model the convolution and masking operation. Enhance 6x6 image with the 3x3 mask operation and derive the mathematical equation for two size row and two size column operation for the digital number variance matrices.	10	CO 3
Q 10	Image mathematics could be derived using the various additive, multiplicative operations. Please discuss the same with the image arithmetic, linear and non-linear operations. Show the same using image arithmetic operation $f(x,y)$	10	CO 4
Q 11	How the image formation takes place through the imaging mechanisms with reference to Figure 2.	10	CO 1



SECTION-C
[1x20=20]

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CO4

The remote sensing scanning system as shown in Figure 2 with narrow and wider swath.

- What does it indicates?
- Explain the basic function of the satellite remote sensing and why the narrow and wider swath is required for the operation?
- List out the various Indian RS satellites.
- Discuss the basic functions of Satellite Image Processing techniques.

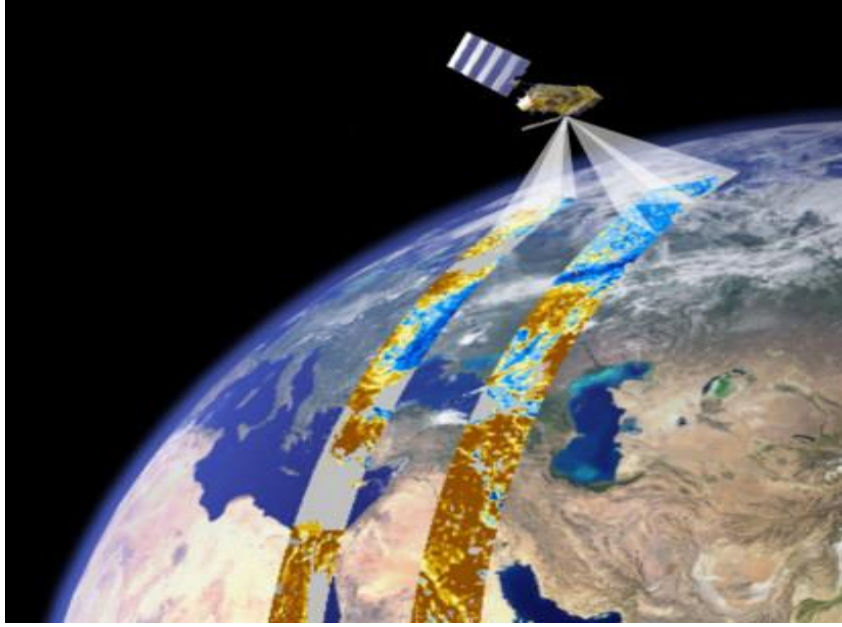


Figure 2