JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT TEST -3 EXAMINATIONS-2022

B.Tech-8th Semester (ECE)

COURSE CODE (CREDITS): 19B1WEC837(3)

MAX. MARKS: 35

COURSE NAME: Remote Sensing and Satellite Image Processing

COURSE INSTRUCTORS: Lt. Pragya Gupta

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

- 1) What is spectral reflectance curve and what is the use of spectral reflectance curve?

 Draw the Spectral reflectance curve for vegetation and explain how the reflectance from healthy vegetation varies with wavelength.

 [5]
- 2) What are the trade -offs between spatial, spectral and radiometric resolution which must be taken into consideration when design a sensor in remote sensing? Suppose we have one 2-bit image and one 8-bit image. Which image will have fine radiometric resolution?

[5]

- 3) What are the main errors commonly encountered due to sensor malfunctioning? Explain them. How these errors can be corrected using Histogram based approach? [5]
- 4) Draw the chromaticity diagram and explain it.

[5]

5) Explain Directional and Non-directional filters for edge enhancement.
Find out the first order and second order derivative of the given pixel values. What information do we get from first and second order derivatives of the given data?
[5]

Pixel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(x)															
Pixel	50	50	40	30	20	10	10	10	60	10	10	10	50	50	60
Values				}						}					
(a)															
1st order					 										
derivative															
2 nd order					ļ										
derivative												:			

6) Short answer questions (Each question is of one mark)-

- [10]
- i. What is the equation used for calculating G (green) value in terms of HSI components?
- ii. What is Polar and Sun synchronous orbit?
- iii. What is the equation used to obtain I (Intensity) component of each RGB pixel in RGB colour format?
- iv. How many bit RGB colour image is represented by full-colour image?
- v. Suppose you have a digital image which has a radiometric resolution of 6 bits. What is the maximum value of the digital number which could be represented in that image?
- vi. Define Specular and Lambertian reflection.
- vii. What is Wien's displacement law?
- viii. How IFOV varies with angle of view?
 - ix. How do we express total radiance mathematically recorded by the sensor?

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x. Define Apogee and Perigee.