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**2603N081**

Candidate's Seat No : \_\_\_\_\_

**M.Sc. Sem.-1 Examination**  
**GIN-401 : Geoinformatics**  
**Fundamentals of Remote Sensing**  
**March 2021**

Time : 2-00 Hours]

[Max. Marks : 50

**Instructions :**

- i). All questions in Section I carry equal marks.  
 ii). Attempt any three questions from Section I.  
 iii). Question IX in Section II is compulsory.

		<b>Section I</b>	<b>Marks</b>
<b>Q1</b>	<b>A).</b>	With help of a sketch and necessary equations describe Plank's law, Wien's displacement law and Stephan Boltzmann law of thermal radiation.	<b>7</b>
	<b>B).</b>	What is meant by spectral signature? With help of a diagram describe spectral signatures of vegetation and water body.	<b>7</b>
<b>Q2</b>	<b>A).</b>	Discuss different types of scattering in atmosphere and explain how scattering affect the remote sensing of earth surface features.	<b>7</b>
	<b>B).</b>	With help of spectral signature, discuss how the following can be discriminated (a) Healthy and unhealthy vegetation (b) Natural turf and artificial turf (c) Shallow water and deep water	<b>7</b>
<b>Q3</b>	<b>A).</b>	Explain different types of platforms used in remote sensing with their advantages and disadvantages. Describe Optical-Mechanical Scanners with suitable diagrams.	<b>7</b>
	<b>B).</b>	Explain different satellite orbits with necessary examples and diagrams. What is the difference between Push-broom scanner and Whisk-broom scanner?	<b>7</b>
<b>Q4</b>	<b>A).</b>	Describe in brief about Indian Remote Sensing Satellite (IRS) program and mention some major applications.	<b>7</b>
	<b>B).</b>	Describe in brief about Indian National Satellite System (INSAT).	<b>7</b>

Q5	A).	Describe in brief about the four resolutions used in remote sensing.	7
	B).	What is meant by spatial filtering? With help of a high frequency filter mask, describe the process of convolution.	7
Q6	A).	Describe why geometric correction is needed in satellite images, explain how is it achieved?	7
	B).	Explain the concept of contrast stretch used for image enhancement. Describe how the histogram equalization method is different from min-max contrast stretch.	7
Q7	A).	a) Briefly discuss the elements of image interpretation with examples b) How to determine the quality of water in remote sensing context	7
	B).	List out the applications of remote sensing in agriculture	7
Q8	A).	Write a short notes on remote sensing applications in (a) urban planning (b) forestry	7
	B).	State important applications of remote sensing in (a) geology (b) ocean science	7
		<b>Section II</b>	
Q9	i).	Which of the following is not an advantage of space based remote sensing a). Provide coverage of inaccessible regions b). Provide repeated observation c). Provide synoptic view d). Provide very high resolution data almost everyday	1
	ii).	What will be the wavelength range of peak emission from a blackbody having temperature of $300^{\circ}$ K a). Visible b). Ultraviolet c). Shortwave infrared d). Thermal infrared	1
	iii).	“Across-Track Scanning” is also known as a). Whiskbroom Scanner b). Along-Track Scanning	1

	c). Push broom Scanner d). Along Scanning	
<b>iv).</b>	MODIS stands for a). Moderate Resolution Imaging Spectroradiometer b). Medium Resolution Imaging Spectroradiometer. c). Moderate Resolution Imaging Spectrometer. d). Moderate Range Imaging Spectroradiometer	<b>1</b>
<b>v).</b>	For enhancing features over a snow covered area, which type of the following stretching method is most suitable? Power stretching Min-max stretching Log stretching Square root stretching	<b>1</b>
<b>vi</b>	Panchromatic sensors generally have a). high spatial and spectral resolutions b). high spatial resolution and poor spectral resolution c). high spectral resolution and poor spatial resolution d). high spectral and radiometric resolutions	<b>1</b>
<b>vii</b>	Which is the key element to identify cricket ground in an image? a). shadow b). association c). shape d). texture	<b>1</b>
<b>viii</b>	Which one of the following helps to identify the objects on the earth surface? a). atmospheric window b). signature c). radiometric error d). all of these	<b>1</b>
		<b>1</b>

