

Register No: _____

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Sixth Semester

Electronics and Communication Engineering

CEC348 Remote Sensing

Regulations - 2021

Duration : 3 Hrs

Maximum: 100 Marks

PART - A(ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Name two key components of a remote sensing system.	RE	1	2
2.	What does the Stefan-Boltzmann Law describe?	RE	1	2
3.	How does radiation interact with the atmosphere?	UN	2	2
4.	State the energy balance equation for Earth's atmosphere.	RE	2	2
5.	Define the Kepler's First law for planetary motion.	RE	3	2
6.	Identify the basic factors affecting satellite position.	RE	3	2
7.	What are active and passive remote sensors, and how do they differ?	RE	4	2
8.	List the primary applications of optical-infrared sensors in remote sensing.	RE	4	2
9.	What are the basic elements of visual image interpretation in remote sensing?	RE	5	2
10.	Why is image rectification necessary before analyzing satellite images?	UN	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

Q.No	Questions	BLT	CO	Marks
11.	a Explain the concept of remote sensing and illustrate its importance in Earth observation applications. Or	UN	1	13
	b i Explain the fundamental principles of electromagnetic radiation and determine how these principles are used in remote sensing technology.	UN	1	7
	ii Compare and contrast the advantages and disadvantages of conventional and remote sensing methods for data collation.	UN	1	6
12.	a Analyze the processes of scattering, absorption, and refraction, and evaluate their impact on the accuracy of remote sensing measurements. Or	AN	2	13
	b Examine the measurements obtained from a spectroradiometer be applied to validate satellite remote sensing data and explain.	AP	2	13

13.	a i	Summarize Kepler's laws of planetary motion and analyze how they describe the elliptical orbits of planets around the sun.	AN	3	7
	ii	Identify the different types of remote sensing platforms and analyze the advantages and disadvantages of each.	AN	3	6
Or					
	b	Using your knowledge of satellite classifications, how would you examine a remote sensing program that utilizes both Sun-synchronous and Geosynchronous satellites	AN	3	13
14.	a	Explain in detail the about the working principles of optical-infrared sensors and analyze their applications in environmental monitoring.	UN	4	13
	Or				
	b i	Write short notes about microwave sensors.	UN	4	7
	ii	Explain the basic principles of LIDAR technology.	UN	4	6
15.	a	Explain the applications of enhancement techniques to improve the clarity of satellite images for agricultural land monitoring	UN	5	13
	Or				
	b i	Explain briefly about Photographic and digital products.	UN	5	7
	ii	With necessary diagram explain the Image classification.	UN	5	6

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Create a workflow for processing satellite data that involves image rectification, enhancement, and classification. How would this workflow vary depending on whether you're analyzing urban growth or environmental changes?	CR	5	15
	Or				
	b i	Asses the orbital velocity of a satellite from the forces acting on the satellite.	EV	3	7
	ii	A satellite is in a 322 km high circular orbit. Evaluate a. The orbital angular velocity in radians per second; b. The orbital period in minutes; and c. The orbital velocity in meters per second. Assume the average radius of the earth is 6378.137 km and Kepler's constant has the value $3.986004418 \times 10^5 \text{ km}^3/\text{s}^2$.	EV	3	8