JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech-VII Semester

COURSE CODE (CREDITS): 22B1WCE731 (3)   MAX. MARKS: 35

COURSE NAME: REMOTE SENSING AND GEOMATICS

COURSE INSTRUCTORS: Akash Bhardwaj   MAX. TIME 2 Hours

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required

for solving problems

(c) Calculators are allowed.

Q.No	Question	CO	Marks
Q1 (a)	What is NDVI? State the mathematical formula of NDVI? What is the typical NDVI range for vegetation and why is it commonly used in vegetation studies?	CO 2	4
Q1 (b)	Using elements of image interpretation, how would you differentiate between: • River and highway • Agricultural field and grassland	CO 1	4
Q2 (a)	Discuss how dielectric constant helps differentiate dry soil from wet soil in a SAR image.	CO 2	2
Q2 (b)	List the major imaging modes in SAR and briefly define any two with figures.	CO 1	3
Q2 (c)	A SAR operates at a wavelength of 0.24 m (L-band) with slant range $R = 750$ km. Required azimuth resolution: 10 m. Find the antenna length.	CO 2	2
Q3 (a)	What is a spectral reflectance curve? Explain with figure. Why is it important in remote sensing?	CO 3	3
Q3 (b)	You observe a reflectance graph where reflectance in the visible region is low, moderately increasing in NIR, and sharply rising in SWIR. Identify the possible surface and explain.	CO 3	2
Q4 (a)	Why does GPS require signals from at least four satellites to accurately determine position? Explain with figure.	CO 3	3
Q4 (b)	What is the control and space segment in GPS and what does it consist of?	CO 3	3
Q5 (a)	Explain the quadtree data structure in GIS with figure.	CO 2	3
Q5 (b)	Differentiate between raster and vector formats in GIS.	CO 2	3
Q5 (c)	Differentiate between line and area features with examples.	CO 2	3