

Degree: B.E. Degree End Semester Examination May 2013
Branch: Civil Engineering
Semester: II Semester
Code number /subject: GI 9302 Microwave Remote Sensing
Duration: 3 hours

Max marks 100

Answer all questions
Part A (10x2=20marks)

1. Explain about SEASAT mission and its unique advantages
2. What is the advancement in RISAT mission of India?
3. Explain the Bragg scattering.
4. Explain SLAR and SAR
5. Write complex wave description and explain
6. What do you mean by **coherence** and **interference**
7. What do you understand by **Brightness Temperature**
8. What is the influence of **Dielectric constant** of a material on microwave scattering
9. What do you mean by calibration in RADAR technology
10. Explain importance of scatterometer mission in Microwave Remote Sensing

Part B (5x16=80 Marks)

11. (a)(i) Explain by mathematical equation the principles of SAR interferometry. (8marks)
(ii) Explain processing steps involved in determining DEM and land subsidence monitoring. (8marks)
12. (a) For the following applications, choose the radar frequency (X, C, , L, P) that you would use and explain your reasoning: (a) Estimating soil moisture, (b) Discriminating of crop type (c) Determining the extend of flooded surfaces in a heavily forested canopy (d) Obtaining accurate measurements of swelling or buckling in seismically active areas (e) Detecting buried river channels in hyper-arid environments- (f) Mapping of oil slicks
(or)
(b) (i) What do you mean by passive microwave remote sensing? (8marks)
(ii) Explain some application of passive microwave remote sensing (8marks)
13. (a) (i) Explain in detail the Geometric characteristics of SAR imagery. (8 marks)
(ii) Explain geological interpretation of RADAR imagery (8 marks)
(or)
(b) (i) Explain how system and target parameters affect the backscatter coefficient. (8 marks)
(ii) Explain how SAR data is unique in flood mapping and soil moisture estimation. (8 marks)
14. (a) (i) Explain Altimetry missions and its use in oceanography. (8 marks)
(ii) Explain the principles of wind scatterometry, applications. (8 marks)
(or)
(b) (i) Explain the application of SAR in oceanography, glacial and ice studies. (8 marks)
(ii) Explain Stokes scattering matrix and its use in polarimetry. (8 marks)
15. (a) (i) How will you describe and represent the polarized waves and also explain about partial polarization. (8 marks)
(ii) Explain polarimetric synthesis and polarimetric decomposition (8 marks)
(or)
(b) (i) Derive area extensive form of radar equation and explain its limitation and applicability. (8 marks)
(ii) Explain agricultural and forestry application of active microwave remote sensing. (8 marks)