



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, April 2018

Programme: B.Tech GIE

Semester – VIII

Course Name: Thermal and Microwave Remote Sensing

Max. Marks : 100

Course Code: GIEG 423

Duration : 3 Hrs

No. of page/s: 02

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### Section-A

Answer all questions

[4X7.5=30]

1. Outline the concept of Apparent Thermal Inertia (ATI) in understanding various surface indicators for lithological mapping [7.5]
2. Describe the Viewing Geometry and Spatial Resolution of RADAR remote Sensing with suitable sketch diagram. [7.5]
3. Compare the difference and similarity of hyperspectral and multispectral remote sensing. [7.5]
4. Evaluate the role of space technology in geoscientific modelling of surface and sub surface resource. [7.5]

### Section – B

Answer all questions

[3X15=45]

5. Briefly outline the concept of LIDAR remote sensing. How LIDAR technology can be utilized in infrastructure development? [15]
6. Evaluate the various speckle noise removal algorithms being used in microwave remote sensing data processing. [15]

7. Explain in detail on processing of RADAR data using SAR interferometry for DEM creation [15]

OR

- Evaluate the Temperature Emissivity Separation (TES) algorithm for multi-channel ASTER data [15]

**Section – C**

**Answer all questions**

**[1X25=25]**

8. Develop an integrated model of hyperspectral, microwave and thermal remote sensing data in geoscientific modelling of the study area for mapping of various natural resources. [25]

OR

- What are the different airborne/satellite sensors available in hyperspectral remote sensing? Explain in detail on mapping of different minerals using hyperspectral remote sensing data. [25]

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