

GMA 220 Semester Test

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GMA 220: study guide **16h30 Tuesday, 15th September 2009** **Room 2-9: Geography Building**

Pay attention to the following sections while studying:

1 Overview of Remote Sensing

- In situ data collection
- The remote sensing process

2 Multi-spectral remote sensing systems

- Multispectral imaging using discrete detectors and scanning mirrors {Landsat sensor systems, NOAA MS scanner systems: look at characteristic resolution(s), application}
- XS imaging using linear arrays: SPOT {Sensor onboard, resolution and application}; Very-High-Resolution Linear Array RS systems
- Spatial, radiometric and spectral resolution

6 Principles of electromagnetic radiation, 15 marks

- Electromagnetic Energy
- Atmospheric energy-matter interaction {Refraction, Scattering, Absorption, Reflection}

- Terrain energy-matter interactions {Hemispheric reflectance, absorptance and transmittance}
- Energy-matter interactions with the remote sensing sensor: target/path radiance
- Remote sensing atmospheric correction {Types: Absolute, relative}

7 Thermal infrared sensing systems

- Wien-displacement law
- Swath width, spatial ground resolution cell size, radial displacement and tangential scale distortions
- Types of geometric correction (of thermal satellite imagery: e.g., ground swath width, ellipsoidal cell resolution)
- Intensity interpolation and methods of re-sampling

References

- [1] Jensen, John R., (2005), Introductory Digital Image Processing: A Remote Sensing Perspective, 3rd Ed., Upper Saddle River, NJ: Prentice Hall, 526 pages
- [2] Thomas, M. L., Ralph, W. K. and Jonathan, W. C. (2008), Remote Sensing and Image Interpretation, 5th/6th Edn. John Wiley & Sons, ISBN 0-471-15227-7 & ISBN 978-0-470-05245-7
- [3] Class notes