



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: GM 276

COURSE NAME: PRINCIPLES OF REMOTE SENSING

CLASS: GM II

TIME: 2½ Hrs

Name: _____ Index Number: _____

ANSWER ALL QUESTIONS

1. Explain Remote Sensing and list the elements involved in Remote sensing process. **[6 marks]**

2. Explain the following types of resolutions as used in Remote Sensing. **[10 marks]**

- (i) Spatial Resolution [2.5 marks]
- (ii) Spectral Resolution [2.5 marks]
- (iii) Radiometric Resolution [2.5 marks]
- (iv) Temporal Resolution [2.5 marks]

3. In Pre-processing of Landsat data in remote sensing, the following two formulas are used.

$$(a) \quad L_{\lambda} = \frac{(LMAX_{\lambda} - LMIN_{\lambda})}{QCALMAX - QCALMIN} * (QCAL - QCALMIN) + LMIN_{\lambda}$$

$$(b) \quad \rho_{\lambda} = \frac{\pi * L_{\lambda} * d^2}{ESUN_{\lambda} * \cos\theta_s}$$

Explain the terms in both formulas and state what role they play in the pre-processing stage. **[10 marks]**

4. Complete the table below. **[10 marks]**

Satellite	SPOT	Landsat 8	IKONOS	Quick Bird	Beijing-1
Date of 1 st launch					
Type of Orbit					
Orbit Altitude (km)					
Revisit frequency					

5. You have been given a remote sensing data (Landsat ETM+) and the district map of Ghana (in a shape file format) to process and detect land use/land cover changes in the Accra metropolis within the period 1991 to 2013. The software available for use is ArcGIS. Indicate precisely eight (8) step-method you will adopt to achieve your aim. **[12 marks]**

6. A number of sensors have been on board a series of satellites. Mention three (3) of these sensors. **[3 marks]**

7. Satellites revolve around the Earth, in a specified path referred to as its orbit. Name and explain briefly these three (3) orbits. **[9 marks]**