EX0012

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCES

DEPARTMENT OF ENVIRONMENTAL SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE IN SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT

ES209: GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING

DURATION: 2 HRS TOTAL MARKS: 70

INSTRUCTIONS TO CANDIDATES

JUN 2024

Answer question 1 and any other two.

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1. (a) Define the following:
   (i) Geographic Information System [4 Marks]
   (ii) Spectral reflectance [2 Marks]
   (iii) Passive remote sensing [2 Marks]
   (iv) Digitizing process [2 Marks]

   (b) Describe the supervised classification process. [5 Marks]

   (c) Discuss the sources of error in Geographic Information Systems (GIS) and remote sensing projects. [15 Marks]

2. (a) Distinguish between the vector data structure and raster data structure [6 Marks]

   (b) Describe the key elements of visual image interpretation. [6 Marks]

   (c) With reference to an example, explain the plane coordinate system. [8 Marks]

3. (a) Explain how accuracy of a classified image can be assessed. [5 Marks]

   (b) Describe the characteristics of the following remote sensing systems in terms of spectral, temporal, and spatial resolution.
   (i) Landsat 8 [5 Marks]
   (ii) Sentinel-2 [5 Marks]
   (iii) Quick Bird [5 Marks]

4. Discuss the applications of spatial analysis in your field of study. [20 Marks]

5. (a) Define the geographic coordinate system. [4 Marks]

   (b) Explain the principle of change detection as applied to remote sensing analysis. [6 Marks]

   (c) Explain the major components for a geographic information system. [10 Marks]

END OF PAPER