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UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMME; BSc. AGRICULTURAL AND BIOSYSTEMS ENGINEERING YR 3

COURSE CODE: ABE 307

TITLE OF PAPER: REMOTE SENSING AND GIS

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS

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QUESTION 1: COMPULSORY QUESTION

a) Calculate the size of a satellite image if it has 120 rows and 200 columns. (7 marks)

b) Determine the area on the ground covered by the image in (a) above, if it has a spatial resolution of 20 m. (8 marks)

c) Discuss how "ranks" and "categories" are used in attribute tables, using examples to illustrate your answer. (10 marks)

d) Discuss three methods that can be used to capture data in vector GIS. Highlight one advantage of each method. (15 marks)

QUESTION 2

a) Using illustrations, discuss how binary masking (also called level thresholding) can be used to prepare a map showing presence and absence of water bodies from satellite data. (15 marks)

b) Discuss the steps to be followed when integrating raster and vector GIS, using IDRISI and ArcView GIS software. (15 marks)

QUESTION 3

a) Discuss the difference between active remote sensing and passive remote sensing. (10 marks)

b) Compare and contrast supervised image classification and unsupervised image classification, highlighting one advantage and one disadvantage of each classification type. (20 marks).

QUESTION 4

a) Discuss how a composite image is produced in remote sensing, indicating the bands that are used to produce it. (10 marks)

b) Discuss three sources of data for vector GIS, indicating the most appropriate source for information on land use pattern in Swaziland. (15 marks)

c) Discuss the function of "Window" operation in remote sensing. (5 marks)