National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
OCTOBER, 2019_2 EXAMINATIONS

COURSE CODE: ESM 407
COURSE TITLE: Geographic Information System.
CREDIT: 3 Units
TIME ALLOWED: 2 ½ Hours
Instruction: Attempt question number ONE (1) and any other FOUR (3) questions. Question number one (1) carries 22 marks, while the other questions carry (12) marks each.

1a) Spatial data captured can be done using which established methods **(3marks)**
1b) Complete the table of commonly used systems of georeferencing **(5marks)**

System	**Domain of uniqueness**	**Metric?**	**Example**	**Spatial resolution**
Place-name	**(1mark)**	No	Abuja, Ekenobizi, Ghana	Varies by feature type
Postal address	Global	**(1mark)**	21, Abayomi Street, Akoka, Lagos, Nigeria	Size of one mailbox
Postal code	Country	No	101017 (University of Lagos, Akoka, Nigeria)	Area occupied by a defined number of mailboxes
Telephone calling area	Country	No	234 (Nigeria)	Varies
Cadastral system	**(1mark)**	Yes	10m x 30m (Dimensions of a land parcel)	Area occupied by a single parcel of land
Public Land Survey System	Western USA only, unique to Prime Meridian	Yes	Sec 5, Township 6E, Range 4N	**(1mark)**
Latitude/ longitude	Global	Yes	$6^{o}23'15"$N, $10^{o}18'42"$E	Infinitely fine
Universal Transverse Mercator	**(1mark)**	Yes	542500E, 327638N	Infinitely fine
State Plane Coordinates	Unique to state and to zone within state	Yes	55086.34E,75210.76N	Infinitely fine

1c) Attempt a comparative analysis of the digitizing and scanning Techniques **(14 marks)**

2a) Explain what attribute data capture is all about (**2marks.)**
2b) Using a well-illustrated diagram show the possible errors that could occur in a digitized map **(10marks)**

3a)What is a projection**?(2marks.)**
3b) Outline the possible attribute data entry errors that occur during data capturing **(6marks)**
3c) Explain the concept of data storage in a GIS environment ***(4marks)***

4) Write short notes on the following geographical analysis procedures **(12marks)**
i)Data Modelling (**3marks.)**
ii)Topological Modelling (**3marks.)**
iii)Network Analysis (**3marks.)**
iv)Hydrological Modelling (**3marks.)**

5a) State the general procedure for updating data in a database **(5marks)**
5b) List the Hardware Component of the GIS **(2marks)**
5c) Identify the data component of GIS **(1mark.)**
5d) Outline reasons for data updating **(2marks)**
5e) Name the classes of geographical features **(2marks)**

6a) Highlight the concept of data updating **(3marks)**
6b) Attempt a comparison analysis between the Raster to Vector models **(9marks)**