KATHMANDU UNIVERSITY
End Semester Examination
January/February 2024

05 FEB 2024

Marks Scored:

Level : B.E.
Year : II

Course : GEOM 204
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date :

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices.

1. The entire earth surface is divided into zones in which type of map projection?
   a. poly conic projection system
   b. cylindrical projection
   c. utm projection
   d. lambert- azimuthal equal area projection

2. If you are making a web map of sampling locations, streams and watershed areas, in what order would you place the layers on the map?
   a. sampling locations, wetland areas, streams
   b. streams, wetland areas, sampling locations
   c. sampling locations, streams, wetland areas
   d. it doesn't matter what order they are in

3. Which of the following doesn't indicate a topology error?
   a. polygonal features
   b. gaps between polygons
   c. thiessen polygons
   d. unclosed polygons

4. Interpolation is made possible by a principle called
   a. Spatial Autocorrelation
   b. Spatial auto-correction
   c. Thematic Autocorrelation
   d. Thematic auto-correction

5. Which of the following represents the correct set of coordinate classification in GIS?
   a. Spherical, projected systems
   b. Geographic, projected systems
   c. Geographic, spherical systems
   d. D. Geographic, geometric systems

6. What type of network analysis is used to find the route that minimizes the distance or time, while taking into account the characteristics of the network?
   a. Shortest path analysis
   b. Service area analysis
   c. Origin-destination analysis
   d. Least-cost path analysis

7. Analysis requires well-defined, consistent methods to produce accurate, reproducible results. Which GIS components define this statement?
   a. Software b. Hardware c. Data d. Procedures

8. The increasing order of abstraction is represented by
   a. Conceptual Model, Logical Model, Physical Model, Reality
   b. Reality, Physical Model, Conceptual Model, Logical Model
   c. Physical Model, Logical Model, Conceptual Model, Reality
   d. Reality, Conceptual Model, Logical Model, Physical Model

9. Which file stores the index of the feature geometry features?
   a. .sbx b. .shp c. .dbf d. .shx

10. What type of overlay analysis is used to identify which features in one layer fall within the boundaries of another layer?
   a. Intersection b. Union c. Difference d. Symmetric difference

11. How is aspect typically represented in a GIS?
   a. As a value between 0 and 360 degrees
   b. As a cardinal direction (N, S, E, W)
   c. As a value between -180 and 180 degrees
   d. As a value between 0 and 90 degrees

12. What is a data model in the context of a database management system (DBMS)?
   a. A set of concepts and rules for representing and organizing data in a database
   b. A set of tools for querying and manipulating data in a database
   c. A set of algorithms for processing data in a database
   d. A set of policies and regulations for governing the use of data in a database

13. What is a semi variogram used for in GIS?
   a. To measure spatial dependence in a dataset
   b. To classify features in a dataset
   c. To create a smooth surface from a set of discrete points
   d. To change the projection of a dataset

14. Which is the correct order for decision support infrastructure using GIS?
   a. Data, Information, Evidence, Knowledge, Wisdom
   b. Information, Knowledge , Data, Evidence, Wisdom
   c. Data, Information, Evidence, Wisdom , Knowledge
   d. Information, Data , Knowledge, Evidence, Wisdom

15. When attributes are independent of location, it is called?
   a. Spatial Autocorrelation b. Positive Spatial Autocorrelation
   c. Zero Spatial Autocorrelation d. Negative Spatial Autocorrelation

16. What are the data management functions provided by GIS?
   a. data import, attribute capture b. attribute editing, feature editing
   c. interpolation, buffering, intersection d. projection, compression, indexing

17. Which file is a database table that stores the attribute information of features?
   a. .sbx b. .shp c. .dbf d. .shx

18. What is resampling used for in GIS?
   a. To create a smooth surface from a set of discrete points
   b. To make a raster dataset coarser and finer
   c. To create classes
   d. To change the projection of a dataset

05 FEB 2024

19. Which of the following are Lossless Compression techniques?
    a. Run-length, Multiresolution Seamless Image Database
    b. Multiresolution Seamless Image Database, Quadtree
    c. Block, Multiresolution Seamless Image Database
    d. Block, Run-length

20. The fundamental principle which refers to the fact that locations that are closer together are more likely to have similar values than locations that are far apart, is commonly referred to as
    a. Tobler's first law of Geography
    b. Kepler's first law of Geography
    c. Anthony's first law of Geography
    d. Thompson's first law of Geography

KATHMANDU UNIVERSITY
End Semester Examination
January/February, 2024

Level : B.E.
Year : II
Time : 2 hrs. 30 mins.

05 FEB 2024

Course : GEOM 204
Semester : II
F.M. : 40

SECTION "B"
[8Q × 5 = 40 marks]

Attempt *ANY EIGHT* questions.

1. What do you understand by GIS? List and explain different functions facilitated by GIS. [5]

2. a. What is Modifiable Aerial Unit Problem? Explain. [2.5]
   b. Explain with figures the different types of Spatial Sampling. [2.5]

3. Explain the advantage of Database Approach in GIS. [5]

4. Differentiate between Vector Data Model and Raster Data Model. Also include advantages, disadvantages, operations and analysis aspects of each model. [5]

5. Explain the process of Data Capture, Input, Storage and Editing in GIS. Support your answer using a practical example while implementing Multi-Criteria Decision Analysis. [5]

6. List and compare different Map projection systems. [5]

7. What do you understand by Digital Elevation Model? Explain the process of Watershed Delineation. [5]

8. What are the factors that you will consider for Spatial Interpolation? Explain different interpolation techniques on the basis of their classification. [5]

9. What do you understand by Network Analysis? Describe a practical implication of Network Analysis in your locality. [5]

10. Write short notes on: (*ANY TWO*) [2Q. × 2.5 =5]
    a. Topology
    b. Abstraction
    c. Error Assessment
    d. Map Algebra and Scale of Analysis