Official GISCI Practice Exam 1

1. When working with data that is in the UTM Zone 19N coordinate system, what unit of measurement is typically used?

    A. Degrees
    B. Feet
    C. Meters
    D. Miles

2. What is 35°15' in decimal degrees?

    A. 35.00
    B. 35.15
    C. 35.25
    D. 35.50

3. You need to convert point data from NAD 27 and NAD 83. What expectations should you have concerning coordinate values between the two horizontal datums?

    A. As the datums have the same ellipsoid, there will be no adverse effect on the data.
    B. Conversion algorithms are so precise that there will be no difference in the before and after coordinates.
    C. The coordinate values are likely not to be the same as before the conversion.
    D. The coordinate values will remain the same regardless of the datum.

4. Which types of rasters are examples of discrete data? Select all that apply.

    A. Elevation
    B. Soils
    C. Temperature
    D. Zoning

5. You are gathering data to conduct an impervious surface analysis for your municipality. Which of the following should you use to best represent streets?

    A. Breaklines
    B. Lines
    C. Polygons
    D. Surfaces

6. How does a TIN differ from a raster data model?

    A. While both a TIN and raster contain uniform cell size, the TIN data sampling is more sparse.
    B. While both a TIN and a raster contain uniform point spacing, the TIN data sampling is more dense.
    C. While both a TIN and a raster represent a surface, the TIN contains irregularly spaced sampling points.
    D. While both a TIN and a raster represent a surface, the TIN contains uniformly spaced sampling points.

7. Which of the following are examples of topology rules? Select all that apply.

    A. Lines must have more than two nodes.
    B. Lines must not intersect.
    C. Polygons must have more than three edges.
    D. Polygons must not overlap.

8.   Which is an example of quality assurance (QA) for geospatial feature collection?

    A.   Comparing collected features to high-resolution imagery and open-source feature data
    B.   Conducting automated checks of features including topology and edge-matching
    C.   Developing standards, policies, and processes to be used during feature collection
    D.   Manually inspecting collected features and attributes over a sample of the project area

9.   You are converting a vector land cover classification dataset based on the Anderson system to a raster dataset. You want to maintain a certain level of accuracy. Which of the following should you first consider when completing the conversion?

    A.   Data pre-processing settings
    B.   Grid cell size
    C.   Number of classifications
    D.   Resampling of data

10. You are assessing the positional error in points collected using GPS. In the error distribution, the mean error is 15 m and the 95% frequency threshold is 20 m. Which of the following statements is correct about the accuracy of these points?

    A.   5% of errors are between 15 m and 20 m.
    B.   5% of errors are greater than 20 m.
    C.   50% of errors are between 15 m and 20 m.
    D.   95% of errors are less than 15 m.

11. Which of the following are examples of core metadata components? Select all that apply.

    A.   Experience level of author
    B.   Points of contact
    C.   Reference system
    D.   Use constraints

12. You are creating a new field in an attribute table that will store information by the hour in order to perform temporal analysis. Which field type should you choose?

    A.   Character
    B.   Date
    C.   Float
    D.   Varchar

13. When assessing a dataset according to the FGDC and ISO components of data quality, which of the following should you consider? Select all that apply.

    A.   Attribute accuracy
    B.   Equipment vendor
    C.   Lineage
    D.   Logical consistency

14. The graphical representation of map elements and symbols by order of intellectual importance is known as:

A. cardinality.
B. layer order.
C. organizational scheme.
D. visual hierarchy.

15. You are creating data where the only source of information is from a 1:100,000 scale map. Which statement is true concerning the relationship between map scale and accuracy in this case?

A. The larger the scale of the map, the larger the amount of error
B. The larger the scale of the map, the smaller the amount of error
C. The smaller the scale of the map, the larger the amount of error
D. The smaller the scale of the map, the smaller the amount of error

16. Which are common conventions when choosing fonts and font colors for your map layout? Select all that apply.

A. Categorize cultural and physical features with differing fonts.
B. Label water features in blue font and italics.
C. Use the same font and font size from your print map in your web map viewer.
D. Use a 3-point font for a small scale map.

17. Which is NOT a type of map used to represent a surface?

A. Contour
B. Network
C. Shaded relief
D. Wireframe

18. Which is the most effective way to visualize elevation change along a polyline?

A. Aspect
B. Identify
C. Inversion
D. Profile

19. You received a legal description for a property and you need to generate a geospatial feature. What is the most appropriate method of data input?

A. Coordinate geometry
B. Coordinate mapping
C. Euclidean geometry
D. "Heads-up" digitizing

20. What is the minimum number of satellites required to calculate an exact 3D GPS location?

A. 3
B. 4
C. 5
D. 6

21.   You want to create a dataset of forested areas from remotely sensed data. Which of the following data source properties is most critical?

        A.   Full-waveform lidar
        B.   Cameras used
        C.   Infrared band
        D.   Time of year

22.   Which of the following is true when using oblique imagery?

        A.   Distances and directions are easily measured.
        B.   Imagery follows a uniform scale throughout the photo.
        C.   Relief may be quite discernible but distorted.
        D.   The entire image is easier to interpret.

23.   Which is a limitation to consider regarding the use of UAS?

        A.   Lack of available technology
        B.   Lack of data processing tools
        C.   Limited areas of application
        D.   Limited platform range
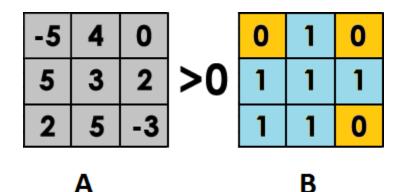

24.   Open source data has the most limitations related to which of the following?

        A.   Attribution
        B.   Complete download
        C.   Modification
        D.   Re-use

25.   When exchanging geospatial data from one software to another, which of the following is generally considered the best practice?

        A.   Data should be exchanged using ZIP files.
        B.   Files should first be converted to CSV format.
        C.   Password protection should be implemented.
        D.   Underscores should be used in file naming conventions.

26.   You are creating a map at a municipal scale that contains roads and buildings overlaid on municipal, high resolution imagery. The roads data layer is a national dataset, and the buildings layer is derived from the imagery. The map displays roads that are offset and may intersect buildings. What should you do to improve the display of layers on your map?

        A.   Adjust the buildings.
        B.   Adjust or digitize roads.
        C.   Change the drawing order.
        D.   Change the symbology.

27.   A data layer needed for a GIS project is only available as .DXF format. Which is a limitation to using this data format within a GIS?

        A.   It cannot be drawn on top of raster data in the GIS.
        B.   It cannot be projected in the GIS.
        C.   It includes a limited amount of attribute data.

D.   It is inaccurate and should not be used.

28.   Which of the following statements is true regarding XML files?

A.   Markup symbols in XML are considered limited and require definitions.
B.   The main intention of the XML file is to describe how information is displayed.
C.   XML files are intended to be shared only between GIS software platforms.
D.   XML files enable the sharing and exchange of portions of database schemas.

29.   Which of the following is NOT a limitation to consider when developing a UAS geospatial data project?

A.   Costs of data processing software
B.   Data storage requirements
C.   Lack of integration with GIS software
D.   Permissions to fly in certain areas

30.   You have a building layer (called Buildings) and you want to create a selection of all buildings with names starting with "BestHotel". You created a SQL statement with a WHERE clause written as BuildingName = 'BestHotel'. The query returned only 20 records. Based on your examination of the table, however, you know there are more records. Which of the following SQL query statements should you utilize in order to use wildcard operators and improve your results?

A.   SELECT from Buildings WHERE BuildingName LIKE 'BestHotel%'
B.   SELECT from Buildings WHERE BuildingName LIKE "%BestHotel%"
C.   SELECT from BuildingName WHERE Buildings LIKE *BestHotel*
D.   SELECT from BuildingName WHERE Buildings LIKE "BestHotel%"

31.   You want to create a vector overlay to show areas prone to both seismic and flooding threats. Which of the following apply to this type of analysis? Select all that apply.

A.   Accuracy of the output will be a function of the input data.
B.   At least one line layer will be required.
C.   The potential for sliver polygons should be a concern.
D.   The same coordinate system for multiple layers is recommended.

32.   You are performing an analysis using soils and property boundary datasets.   You need to determine the amount of each soil type on individual parcels for assessment purposes. Which of the following statements would best describe the interpretation of the results of an overlay operation between these two data layers? Select all that apply.

A.   Since both the soils and property layers are of the same accuracy, the resulting overlay will be accurate.
B.   The accuracy of each layer must be understood so that the results of the overlay operation can be interpreted correctly.
C.   The accuracy of the property data should be improved by rubber-sheeting property corners to their actual coordinates and then overlaying the soils data.
D.   The accuracy requirements for the resulting analysis must be understood to determine whether or not the business requirements can be met.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

33.   What is the purpose of the formula shown?

A. The formula is used to calculate the deviation of a Cartesian coordinate system.
B. The formula is used to calculate the direction between locations in a Cartesian coordination system.
C. The formula is used to calculate both distance and direction between locations in a Cartesian coordinate system.
D. The formula is used to calculate the distance between locations in a Cartesian coordinate system.

-5	4	0
5	3	2
2	5	-3

>0

0	1	0
1	1	1
1	1	0

A   **B**

34.
Which of the following map algebra operator types is depicted in the graphic, where B is the resulting raster?

A. Local/Arithmetic
B. Focal/Neighborhood
C. Relational/Logical
D. Zonal/General

35.   You are conducting an accuracy assessment on two samples of elevation points using RMSE as your measure. Sample A has 100 observations and 400 as the sum of squared differences. Sample B has 10 observations and 90 as a sum of squared differences. Which sample is more accurate?

A. Both samples are equivalent in RMSE.
B. RMSE cannot be calculated due to low sample size.
C. Sample A because it has a lower RMSE.
D. Sample B because it has a lower RMSE.

36.

Table 1

Owner Name	PIN
Smith	P101
Jones	P101
Larson	P102
Doyle	P102
Allen	P103
Larson	P104
Allen	P105

Table 2

PIN	Sale date	Acres	Zone Code
P101	1/10/1998	1.2	1
P102	10/2/1999	2.5	2
P103	5/19/2001	3.1	3
P104	5/1/1999	5.1	1
P105	2/16/1979	1.5	2

Consider the two tables shown. You want to link the two tables together to combine their information into Table 1. What would be the appropriate process?

A. Append
B. Join
C. Relate
D. Union

37.   Which part of a database table contains the attribute data type constraints?

A. Fields
B. Keys
C. Records
D. Tuples

38.   You have two tables that share a primary key and have a many-to-many relationship. Which process should you use to link them together?

A. Add
B. Join
C. Merge
D. Relate

39.   While editing attributes in a zoning dataset, what should be applied to the zone attribute field to prevent spelling errors?

A. Accuracy
B. Default value
C. Domain
D. Spell check

40.   Your organization has a satellite office that is experiencing connection performance issues when accessing its GIS database at the central office. What is a valid method to resolve this?

A. Concurrent control
B. Database replication
C. Redistribute shapefiles
D. Transaction log exchange

41.   Which of the following is NOT an approach for geospatial data exchange between dissimilar systems?

A. Application programming interface
B. File-based
C. Native format
D. Web services

```
Start

Input X

Input Y

Input ExtentOffset

Set MinX = X - ExtentOffset

Set MinY = Y - ExtentOffset

Set MaxX = X + ExtentOffset

Set MaxY = Y + ExtentOffset

Set Extent = New Extent(MinX, MinY, MaxX, MaxY)

Output Extent

Stop
```

42.

The pseudocode routine shown creates a map extent centered on a point. Based on the pseudocode, which statement regarding the Output Extent is true? Assume that all coordinates are in the same non-angular units.

A. It is equal to the distance of the ExtentOffset around the input coordinate pair.
B. It is a rectangle whose width is equal to ExtentOffset, and height is equal to ExtentOffset x 2.
C. It is a single line comprised of two coordinate pairs, separated by a distance of ExtentOffset.
D. It is a square whose height and width dimensions are both equal to the ExtentOffset / 2.

43.   Which of the following is NOT associated with the Agile process?

A. Continuous delivery of systems
B. Continuous integration of systems
C. Creating value with fewer resources
D. Limited testing of systems

44.   A computer that requests a service from another computer is a:

A. client.
B. processor.
C. requester.
D. server.

45.   Which are the most important advantages of utilizing cloud infrastructure when deploying GIS? Select all that apply.

A. Collaboration barriers
B. Elastic deployments
C. Guaranteed security
D. Reduced hardware purchase

46.   What would be the most effective and secure communication protocol to use for a new web application that would still allow it to be widely accessible?

A. HTTPS
B. HTTP
C. LDAP
D. SFTP

47.   Utility workers wearing special headsets are able to view the underground as-built utility network and the real world in front of them while working in the field. This immersive reality would be classified as:

A. augmented.
B. mixed.
C. simulated.
D. virtual.

48.   How should you approach the accumulation and evaluation of information for use in a model intended to identify suitable properties for development?

A. Accumulate data from a variety of sources that include all the variables you want to consider, and then incorporate them into your model.
B. Assuming fully compliant metadata is an indicator of more reliable information, weight the data in your model with a fitness for use rating.
C. Identify the authoritative information you want to include in your model and attempt to access it directly from the source.
D. Since this is only a preliminary analysis, use as much information as available, representing as many constraints/opportunities as possible.

49.   At what stage of a GIS project would you perform project monitoring?

A. During all stages of the project
B. During data collection
C. During project delivery
D. During software and services purchasing

50.   Which of the following is NOT an appropriate GIS Professional task?

A. Acquisition of field data required to recover a property boundary
B. Collection of data related to school district boundaries
C. Georeferencing source materials for data maintenance
D. Production of maps depicting parcels for a city

Practice Exam 1 Answer Key

1. C
2. C
3. C
4. BD
5. C
6. C
7. BD
8. C
9. B
10. B
11. BCD
12. B
13. ACD
14. D
15. C
16. AB
17. B
18. D
19. A
20. B
21. D
22. C
23. D
24. A
25. D
26. B
27. C
28. D
29. C
30. A
31. ACD
32. BD
33. D
34. C
35. C

36. B
37. A
38. D
39. C
40. B
41. C
42. A
43. D
44. A
45. BD
46. A
47. A
48. C
49. A
50. A