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Continuing Education Course #130  
Introduction to GIS and GPS  
for Engineers and Surveyors

1. The “S” in the acronym GIS stands for:

- a. System
- b. Science
- c. Strategy
- d. a or b

2. The GIS primary functions performed on data include all of the following except:

- a. analyzing
- b. distributing
- c. querying
- d. storing

3. Components of vector geographic information include:

- a. attributes
- b. projections
- c. geometry
- d. a and c

4. The utilities sector relies upon GIS to map and inventory its pipelines, pumps, electric lines and transformers as a means of managing networks.

- a. T
- b. F

5. The acronym “GISP” as used within the context of this course stands for:

- a. Geographical Information Science Professional
- b. Geographical Information Strategy Professional
- c. Global Invasive Species Programme
- d. Greenland Ice Sheet Project

6. In order to project spherical coordinates onto a planar coordinate system for mapping, at least one of the following properties must be sacrificed:

- a. area
- b. distance
- c. direction
- d. all of the above

7. Horizontal datums allow for planar coordinates to be calculated when applying a projection to an area.

- a. T
- b. F

8. A coordinate system is made up of all of the following except:

- a. scale
- b. datum
- c. ellipsoid
- d. projection

9. The world file containing georeference information for a JPEG image file named “vegetation.jpg” is:

- a. vegetation.jgw
- b. vegetation.jgq
- c. vegetation.wgj
- d. vegetation.gjw

10. The shapefile format comprises individual files used to define geometry and attributes of features with the following file extensions:

- a. .shn, .shp and .dbg
- b. .shx, .shp and .dpi
- c. .sbn, sbx and .shn
- d. .shp, .shx and .dbf

11. A shapefile adheres to topology rules.

- a. T
- b. F

12. A detention pond on CAD layer or level 1 and a building footprint on layer or level 3 will be imported into ArcGIS as one polygon feature class inside a CAD dataset.

- a. T
- b. F

13. Geodatabases can hold all of the following except:

- a. CAD datasets
- b. topology information
- c. coverages
- d. a spatial reference system

14. TINs, or Triangulated Irregular Network files are a form of vector data used to simulate terrain surfaces for engineering models.

- a. T
- b. F

15. Layer files are for storing a dataset’s symbology, symbology classifications and display properties, including annotation, but not the data itself.

- a. T
- b. F

16. Metadata is equivalent to  $10^6$  bytes of data.

- a. T
- b. F

17. Feature attributes, raster resolution, coordinate system information and origination dates of data all refer to properties required of:

- a. topology
- b. georeference information

- c. metadata
  - d. all of the above
18. Method(s) used to collect GIS data include:
- a. Scanning paper maps
  - b. Remote sensing
  - c. COGO transformations
  - d. all of the above
19. GPS technology involves the use of:
- a. Layer files
  - b. NAVSTAR satellites
  - c. Global Power Stations
  - d. local radio telemetry
20. GPS coordinates are captured and displayed in what coordinate reference system?
- a. NAD83
  - b. NAD27
  - c. WGS85
  - d. WGS84
21. GPS augmentation system(s) includes the following:
- a. WAAS
  - b. CORS
  - c. a and b
  - d. none of the above
22. Standard GPS accuracies without augmented correction systems are provided at which range with a 95% certainty of true position?
- a. 2 – 4 m
  - b. 95 – 100 m
  - c. 1 – 3 m
  - d. <1 m
23. Vertical positioning errors are typically 1+ to 3 times larger than horizontal positioning errors using GPS.
- a. T
  - b. F
24. The three types of GPS roving receivers include all of the following except:
- a. recreational grade
  - b. mapping grade
  - c. commercial grade
  - d. survey grade
25. Errors inherent with GPS data capture are due to the following:
- a. antenna strength
  - b. distance between base station and receiver
  - c. multipath errors
  - d. all of the above

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