

GEOGRAPHY 176B MID-TERM TEST

February 2, 2010

1. Which answer is closest to the length of the coastline of Italy?
 - a. 2500km
 - b. 5500km
 - c. 8500km
 - d. There is no correct answer, the length depends on the scale at which the coastline is represented
2. Roughly how much of the Earth's surface area is land?
 - a. 1/4
 - b. 1/3
 - c. 1/2
 - d. 2/3
3. Why do we need representations of the geographic world?
 - a. To learn about places that we cannot experience directly
 - b. To reduce geographic information to a manageable volume
 - c. To build GIS databases
 - d. All of the above
4. Which is not a commonly used binary coding scheme?
 - a. MP3
 - b. ASCII
 - c. Latitude
 - d. JPEG
5. What is the approximate accuracy on the ground of a latitude expressed to 3 decimal places, e.g. 34.589?
 - a. 100km
 - b. 10km
 - c. 1km
 - d. 100m

6. Approximately how many decimal digits can be stored in a single-precision real number?
- a. 4
 - b. 8
 - c. 16
 - d. 32
7. What is the value of these 16 bits stored as a short integer: 0000000010110000?
- a. 12
 - b. 115
 - c. 176
 - d. 199
8. A database is designed to store a coarse representation of the Earth's coastline by allocating one bit (0=water, 1=land) to each 1 sq km. Roughly how many bytes (1 byte = 8 bits) of storage would the database require at a minimum, and assuming no compression?
- a. 63 megabytes
 - b. 630 megabytes
 - c. 6.3 gigabytes
 - d. 63 gigabytes
9. The Weather Service uses a system of sensors to pinpoint lightning strikes across the US, and stores the result as a point shapefile. What conceptualization is it using?
- a. Continuous field
 - b. Discrete object
 - c. Geotypical
 - d. Geospecific
10. The same database from (9) is processed to create a contour map of the density of lightning strikes across the US. What is the conceptualization now?
- a. Continuous field
 - b. Discrete object
 - c. Geotypical
 - d. Geospecific

11. Which of the following types of geographic data is *least* suited to a discrete-object conceptualization?
- a. The locations of automobiles in California
 - b. The locations of Dunkin Donut stores in Providence, RI
 - c. A map of vegetation cover type
 - d. A map showing the locations of major US ports
12. Which of the following can be used to represent a phenomenon conceptualized as a continuous field?
- a. A collection of contours digitized as polylines
 - b. A raster
 - c. A triangulated irregular network
 - d. All of the above
13. In the original ARC/INFO implementation of the relational model circa 1980:
- a. Arc and polygon attributes were stored in relational tables
 - b. Arc coordinates were stored in relational tables
 - c. All information was stored in relational tables
 - d. None of the above
14. An attribute whose values appear in two tables in the relational model, and is used to represent relationships between cases in the tables, is called:
- a. A tuple
 - b. A relation
 - c. A common key
 - d. A join
15. A public-health study is looking at possible relationships between obesity and access to fast food in a large city. Two tables are created in a relational model. The first describes a sample of 20,000 individuals, with attributes of name, residence lat/long, and body-mass index. The second describes each of the city's census tracts, and includes attributes of the tract population and the number of fast-food outlets in the tract. To carry out the analysis it is necessary to combine the two tables into one, giving for each census tract the average body-mass index of sampled residents of that tract, and the number of fast-food outlets per capita. The task of combining the two tables is known as:
- a. Inheritance
 - b. Encapsulation
 - c. A spatial join
 - d. Multiplicity

16. In (15) the two analyzed attributes of the combined table are:
- a. Both spatially extensive
 - b. Both spatially intensive
 - c. One spatially intensive, one spatially extensive
 - d. None of the above
17. Which of the following are topologically the same?
- a. A circle and a square
 - b. A circle and a cube
 - c. A hexagon and a line
 - d. A point and a donut
18. In a UML diagram an open triangle points from Class B to Class A. What does this mean?
- a. Class A inherits the attributes of Class B
 - b. Class B inherits the attributes of Class A
 - c. Class A records aggregate Class B records
 - d. Class B records aggregate Class A records
19. In UML what is indicated by a class name in italics?
- a. An aggregation
 - b. A composition
 - c. An abstract class
 - d. A class without geometry
20. For the purposes of analysis two adjacent census tracts are combined by removing the common boundary between them. One has a population density of 1000 per sq mile and an area of 5 sq miles, the other has a population density of 500 per sq mile and an area of 10 sq miles. What would be the population density of the combined tract in people per sq mile?
- a. 1500/15
 - b. 10000/15
 - c. 1500
 - d. 10000
21. If a merge rule such as that employed in (20) is stored as a property of the class of census tracts this is said to be:
- a. Inheritance
 - b. Encapsulation
 - c. A spatial join
 - d. None of the above

22. In (20) which attributes are spatially intensive?
- a. Population density
 - b. Population count
 - c. Census tract area
 - d. None of the above
23. What is a use case?
- a. A record in a table
 - b. An example application that is used to start the process of designing a database
 - c. The boundary of a study area
 - d. A suitcase that has been damaged by an airline baggage handler
24. Santa Barbara MTD decides to build a geodatabase to keep track of bus stops. The geodatabase has two classes of objects: streets and bus stops. Each street is one record in the streets class, and each bus stop is one record in the bus stop class. A street can have any number of bus stops, including 0. A bus stop is always located on exactly one street. What symbol(s) appear at the street end of the line depicting this association?
- a. 0
 - b. 1
 - c. $0 \dots n$
 - d. $1 \dots n$
25. The “polyline M” option in ArcGIS is used to:
- a. Keep track of elevations along a polyline
 - b. Keep track of distances along a polyline
 - c. Handle polylines that have multiple parts
 - d. Merge multiple parts of polylines
26. When a coverage is digitized, all boundaries are first captured as polylines or “spaghetti”. These are then analyzed by the computer, to close gaps, remove overshoots, and form closed polygons. This operation is termed:
- a. cooking the noodles
 - b. buffering
 - c. building topology
 - d. polyline overlay

27. In the TIGER database each record represents:
- An entire street
 - A stretch of street between two adjacent intersections
 - An area of uniform animal habitat
 - The common boundary between two areas of uniform habitat
28. The task of converting street addresses into lat/long coordinates is termed:
- Geocoding
 - Geocaching
 - Digitizing
 - Building topology
29. What is the difference between an aggregation and a composition?
- All of the elements of a composition must have geographic locations
 - All of the elements of an aggregation must have geographic locations
 - Removal of one member of a composition destroys the composition
 - Removal of one member of an aggregation destroys the aggregation
30. Following is an AAT. In what order do the arcs occur in a clockwise direction around Polygon A?

Arc ID	RPOLY	LPOLY	From node	To node
1	A	0	1	2
2	C	0	2	4
3	0	B	1	4
4	C	A	3	2
5	A	B	3	1
6	B	C	3	4

- 5,1,4
- 5,4,1
- 1,2,3
- 1,3,2