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<b>DIVISION OF INFORMATION TECHNOLOGY, ENGINEERING &amp; THE ENVIRONMENT</b>
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<b>SCHOOL OF NATURAL &amp; BUILT ENVIRONMENTS</b>
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Subject Area:	GEOE	Catalogue Number:	2017
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<b>Geographic Information Systems 3 (GEOE 2017)</b>
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Examination Day: Tuesday	Examination Date: 21 <sup>st</sup> June
Examination Time: 18.30	Length of Exam: 1.30 hrs

Examination Venue:	Ridley Centre/Royal Banquet Room/Other _____
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<b>Instructions to Candidates</b>
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## **Study Period 2 2005**

**Allowed time 1 hrs 30 minutes Total marks = 30**

### **General Instructions**

- 1) Attempt any five Questions from Part 1
- 2) Attempt all multiple choice questions in Part 2 and **write multiple choice answer in the brackets against each question and submit this question paper along with the answer book.**
- 3) Marks for each questions are indicated
- 4) Ensure that you have filled your name, Your user name and program and course titles are clearly written (**on the answer book and on this question paper**) at the appropriate places

### **Additional Instructions**

- 1) Read the question paper carefully
- 2) Clearly state any assumptions made
- 3) Use examples and diagrams where appropriate, in answering the questions
- 4) Start a new question on a new page in the answer book
- 5) Write clearly the question number at the top left margin on each page
- 6) Use both sides of the paper in the answer book



## Part 1

Define and illustrate the meaning of **five** of the following terms: **(5\* 2 = 10 Marks)**

- 1) Referential Integrity in relational databases
- 2) Quadrees
- 3) Phony precision
- 4) Difference between the frequentist and subjectivist interpretations of probability.
- 5) Kappa Index
- 6) Cascading Errors

## Part 2

**Attempt all multiple choice questions – 40\*0.5 = 20 Marks**

**Write multiple choice answer in the brackets against each question and submit this question paper along with the answer book ( Make sure that you have written your names on both the answer book and question paper)**

**Select only one best choice for each question.**

**1. In a geodatabase feature class, what is the name of the field that stores each feature's geometry? ( )**

- a) OBJECTID
- b) Area
- c) Shape\_Area
- d) Shape

**2. Which of the following is used to create relationships between objects in a geodatabase? ( )**

- a) Subtype
- b) Connectivity rule
- c) Attribute domain
- d) Relationship class

**3. Feature class contain features with a single type of geometry. ( )**

- a) True
- b) False

**4. SQL is: ( )**

- a) The Semi-Quotient Locator, a fuzzy set based human-GIS interactive process
- b) Structured Query Language: A standardized language for the query of relational database managers and many GISs
- c) Slightly Querulous Locution: A type of GIS command line interpreter
- d) The sequel to a GIS overlay operation, when data are "unvarying"
- e) A nonexistent acronym devised to trick me on this exam

**5. All features in a feature dataset must have the same geometry type. ( )**

- a) True
- b) False

**6. A personal geodatabase cannot store the same types of features as an enterprise geodatabase. ( )**

- a) True
- b) False



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7. **What is the maximum size of a personal geodatabase?** ( )
- a) 4 GB
  - b) 170 MB
  - c) 200 MB
  - d) 2 GB
8. **When creating a feature class, the geometry type determines whether the feature class will be:** ( )
- a) Raster or vector
  - b) Stored as Binary or Non-binary integers
  - c) Point, line, or polygon
  - d) A coverage or shapefile
9. **What is different about the way a geodatabase feature class stores data compared to shapefiles and coverages?** ( )
- a) A geodatabase feature class stores spatial and attribute data in one table, while shapefiles and coverages store spatial and attribute data in the multiple tables.
  - b) A geodatabase feature class contains one record for every feature, while shapefiles and coverages contain separate records for each feature.
  - c) A geodatabase feature class indexes spatial and attribute data for faster display, while shapefiles and coverages do not.
  - d) A geodatabase feature class stores spatial and attribute data in several tables, while shapefiles and coverages store spatial and attribute data in the one table.
10. **What is a feature class?** ( )
- a) A set of homogeneous features, such as highways and streets
  - b) The same thing as a feature dataset
  - c) A collection of topologically related features, such as roads and intersections
  - d) A type of data, such as vector
11. **If you don't know the accuracy of your data, it is generally safest to use the default cluster tolerance.** ( )
- a) True
  - b) False
12. **You can only use Map Topology to edit feature classes or shapefiles that are stored within the same folder or geodatabase.** ( )
- a) True
  - b) False
13. **Map topology allows you to maintain the spatial integrity of your data between features in more than one feature class.** ( )
- a) True
  - b) False
14. **Map topology does NOT model which of the following spatial relationships between features?** ( )
- a) Coincidence
  - b) Connectivity
  - c) Area
  - d) Adjacency
15. **It is possible that a soil pH measurement of 5.3 is precise, even if the true value for that location is 6.7.** ( )
- a) True
  - b) False
16. **You can validate a geodatabase topology in ArcCatalog, but not in ArcMap.** ( )
- a) True
  - b) False



**17. If a geodatabase feature dataset contains a topology and a geometric network, which of the following is true regarding the feature classes in the dataset? ( )**

- a) The feature classes can participate only in the geometric network.
- b) The feature classes can participate in either the topology or the geometric network, but not both.
- c) The feature classes can participate only in the topology.
- d) The feature classes can participate in both the topology and the geometric network.

**18. It is generally better to set a larger cluster tolerance. ( )**

- a) True
- b) False

**19. You can use Map Topology to edit feature classes or shapefiles stored in a geometric network. ( )**

- a) True
- b) False

**20. All of the following are rules for living with uncertainty, except one. Which one? ( )**

- a) Rely on a single data source if you can.
- b) Document your own uncertainty in the notes you publish with your analysis.
- c) Understand what you don't know about your data.
- d) Investigate alternative outcomes using what you know about the error in your data.

**21. Which of the following file extensions identifies an ArcScene document? ( )**

- a) .mxd
- b) .sxd
- c) .shp
- d) .sxt

**22. Which of the following applications provides a 3D display and analysis environment? ( )**

- a) ArcCatalog
- b) ArcScene
- c) ArcReader
- d) ArcMap

**23. Which values are used to store the 3D component of your data? ( )**

- a) y-values
- b) a-values
- c) x-values
- d) z-values

**24. What are the three broad categories of 3D data you can work with in 3D Analyst? ( )**

- a) Shapefiles, Geodatabases, Tiffs
- b) Rasters, Shapefiles, Coverages
- c) TINs, Rasters, 3D Features
- d) TINs, Rasters, DEMs

**25. Of the following, which would be considered a type of continuous data? ( )**

- a) Soil nitrogen levels
- b) Streets
- c) Parcels
- d) Zoning districts

**26. Which of the following terms describes the study of seismic waves? ( )**

- a) Geology
- b) Seismology
- c) Seismography
- d) Tomography



**27. Building damage is proportionally related to the distance from the epicenter. ( )**  
a) True  
b) False

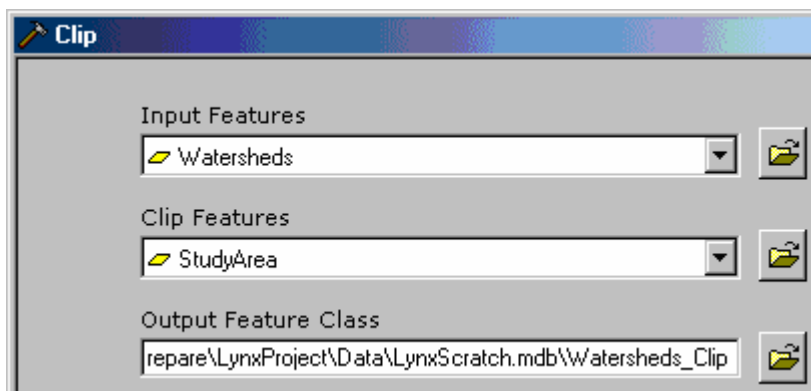
**28. Which of the following is a container that allows you to store all of your hazards data together for easy management? ( )**  
a) Shapefile  
b) Layer file  
c) Coverage  
d) Geodatabase

**29. Which of the following would allow you to add a shapefile containing earthquake hazards zones to a geodatabase from ArcMap? ( )**  
a) Selecting all of the earthquake hazard features, right-clicking the earthquakes hazards layer in the table of contents, pointing to Selection, and clicking Create Layer From Selected Features  
b) Using the Geoprocessing Wizard to merge layers together  
c) Right-clicking the earthquakes hazards layer in the table of contents, pointing to Data, and clicking Export Data  
d) Right-clicking the earthquake hazards layer in the table of contents and clicking Convert Features to Graphics

**30. In which of the following phases of the disaster management cycle would GIS help answer the question, "Where should increased security measures be put in place to avoid or minimize a terrorist attack?" ( )**  
a) Recovery  
b) Preparedness  
c) Identification and planning  
d) Mitigation

**31. Suppose you want to enter a value for a second optional parameter in the command line, but you want to accept the default value for the first optional parameter. What is an appropriate entry for accepting the default parameter value? ( )**  
a) An asterisk (\*)  
b) The word OK  
c) The word YES  
d) The pound sign (#)

**32. Examine the graphic below: ( )**



All of the following are true except one. Which one?  
a) The Clip tool is being run from ArcCatalog.  
b) A default output feature class name is being used.  
c) Only the features of Watersheds that overlap the features of StudyArea will be added to the output feature class.  
d) The features of Watersheds will be clipped to the features of StudyArea.



**33. You can store everything you need for your GIS project in a geodatabase, including all of the following except one. Which one? ( )**

- a) Tables
- b) Feature classes
- c) Scripts
- d) Custom toolboxes

**34. You can tell if a shapefile contains 3D data by previewing its table. ( )**

- a) True
- b) False

**35. All of the following statements about raster data are true except one. Which one? ( )**

- a) Rasters are used for modeling continuous data.
- b) Rasters make use of irregularly-spaced cells to show variations within a surface.
- c) Rasters can be drawn in 3D based on their z-values.
- d) Any numeric value stored within the cells can be used to draw rasters in 3D.

**36. Z-values always store elevation values. ( )**

- a) True
- b) False

**37. When looking at an attribute table, how can you tell if it is associated with 3D features? ( )**

- a) The SHAPE field will contain an "H" following the feature type.
- b) There is a field called 3D height.
- c) The table's title will contain the prefix "3D."
- d) The SHAPE field will contain a "Z" following the feature type.

**38. Which of the following hazards is associated with submarine earthquakes near the coast? ( )**

- a) Landslide
- b) Tsunami
- c) Storm surge
- d) Flash flood

**39. One purpose of vertical exaggeration is to emphasize small elevation changes on a flat surface. What is another purpose? ( )**

- a) To improve the display resolution of rasters
- b) To ensure that all slope values on an elevation surface are positive
- c) To correct for visual distortions caused by atmospheric refraction
- d) To bring z-values into proportion with x,y values when they are in a different unit of measure

**40. Which of the following is a table that records classification error for a database? ( )**

- a) Root Mean Squared Error
- b) Kappa index
- c) Confusion matrix
- d) Bivariate Gaussian distribution