

Principles of Geographic Information System

Unit I

(A Gentle Introduction to GIS, Geographic information & spatial data types)

- 1. GIS is an acronym of _____.**
 - a. Generic Information System
 - b. Geological Information System
 - c. Geographic Information Sharing
 - d. Geographic Information System
- 2. GIS deals with which kind of data?**
 - a. Numeric data
 - b. Binary data
 - c. Spatial data
 - d. Complex data
- 3. Which of the following statements is true about the capabilities of GIS?**
 - a. Data capture and preparation
 - b. Data management, including storage and maintenance
 - c. Data manipulation, analysis & presentation
 - d. All of the above
- 4. By 'spatial data' we mean data that has**
 - a. Complex values
 - b. Positional values
 - c. Graphic values
 - d. Decimal values
- 5. What is 'Metadata'?**
 - a. It is 'meteorological data'
 - b. It is 'oceanic data'
 - c. It is 'contour data'
 - d. It is 'data about data'
- 6. Key components of 'spatial data' quality include**
 - a. Positional accuracy
 - b. Temporal accuracy & Logical consistency
 - c. Lineage and completeness
 - d. All of the above
- 7. 'Spatial databases' are also known as**
 - a. Geodatabases
 - b. Monodatabases
 - c. Concurrent databases
 - d. None of the above

8. Successful spatial analysis needs

- a. Appropriate software
- b. Appropriate hardware
- c. Competent user
- d. All of the above

9. What are the two general data formats used in GIS?

- a. Vector and raster
- b. Points and lines
- c. Features and attributes
- d. Digital and paper maps

10. How are neighborhoods represented in GIS?

- a. Polygon
- b. Line
- c. Point
- d. Location

11. Mapmakers use GIS to

- a. store geographic information
- b. use geographic information
- c. view geographic information
- d. store, use and view geographic information

12. The information in GIS is entered and stored as

- a. Panels
- b. Layers
- c. single panel
- d. dual-panel

13. The user can use GIS to make

- a. complex analyses only
- b. display maps only
- c. complex analyses and display maps
- d. none of these

14. House is an example of

- a. Continuous object
- b. Dynamic object
- c. Discrete object
- d. Unreal object

15. Temperature is an example of

- a. Continuous object
- b. Dynamic object
- c. Discrete object
- d. Unreal object

16. Which of the following is not an example of spatial data?

- a. Times of particular events
- b. Line showing the route of linear objects
- c. Polygons showing the area occupied by a particular land use
- d. Points showing discrete objects

17. Which of the following acts a benefit of GIS?

- a. Maintaining geo spatial data
- b. Data sharing
- c. Accurate data information
- d. Presence of data retrieval service

18. Which of the following doesn't determine the capability of GIS?

- a. Defining a map
- b. Representing cartographic feature
- c. Retrieving data
- d. Transferring data

19. Basic elements of spatial information

- a. Point, Line, Arc
- b. Graph
- c. Design
- d. Map

20. Among the following, which do not come under the components of GIS?

- a. Hardware
- b. Software
- c. Compiler
- d. Data

21. Our object of study can have different characteristics for different locations and these characteristics change over time. This is referred as _____.

- a. Spatial dimension
- b. Spatio-temporal dimension
- c. Temporal dimension
- d. Positional dimension

- 22. Data is _____ if it is associated with some position on the Earth's surface, by using a spatial reference system.**
- Georeferenced
 - Dynamic
 - Static
 - None of the above
- 23. Data can be georeferenced using _____ co-ordinates.**
- Longitude
 - Latitude
 - Both
 - None
- 24. We can use sample measurements to estimate the value of phenomena in places where we have not measured it, using a technique called _____.**
- Geographical interpolation
 - Spatial interpolation
 - Spatial recursion
 - Geographical estimation
- 25. _____ phase deals with putting it all together into a format that communicates the result of data analysis in the best possible way.**
- Data capture
 - Data analysis
 - Data presentation
 - Data Sharing
- 26. Many issues arise in data presentation phase. They are _____**
- Message & audience
 - Medium & technique
 - Rules of aesthetic
 - All of the above
- 27. The discipline that deals with all aspects of the handling of spatial data and geoinformation is called _____.**
- GI System
 - Geographic information technology
 - Geographic information science
 - Geoinformatics
- 28. _____ is the data that contains positional values such as (x; y) co-ordinates.**
- Spatial data
 - Geo-spatial data
 - Geo-referenced data
 - All of the above

- 29. _____ is a specific type of information resulting from the interpretation of spatial data.**
- a. Geoinformation
 - b. Dynamic information
 - c. Static information
 - d. None of the above
- 30. The extent to which errors and other shortcomings of a data set affect decision making depends on the purpose for which the data is to be used. This is referred as _____.**
- a. Data assurity
 - b. Data Equality
 - c. Data Quality
 - d. All of them
- 31. Data about data is called as _____.**
- a. Base data
 - b. Model data
 - c. Reference data
 - d. Metadata
- 32. Identify data quality parameters from below:**
- a. Positional accuracy
 - b. Lineage
 - c. Completeness
 - d. All of them
- 33. Proper labelling of features or of classifications is known as _____.**
- a. Positional accuracy
 - b. Lineage
 - c. Attribute accuracy
 - d. Completeness
- 34. When data is not logically structured it is assumed as _____.**
- a. Positional inaccuracy
 - b. Attribute inaccuracy
 - c. Incompleteness
 - d. Logical inconsistency
- 35. A representation of some part of the real world that has certain characteristics in common with the real world is known as _____.**
- a. Modelling
 - b. Analyzing
 - c. Digitizing
 - d. None of them

36. Select correct feature of database from given options:

- a. Concurrent use
- b. Storage optimization
- c. Query facility
- d. All of them

37. _____ is a geographic phenomenon for which, for every point in the study area, a value can be determined.

- a. Geographic object
- b. Geographic space
- c. Geographic field
- d. All of them

38. _____ populate the study area, and are usually well distinguished, discrete, and bounded entities.

- a. Geographic objects
- b. Geographic space
- c. Geographic field
- d. All of them

39. Different kinds of data values which we can use to represent geographical phenomena are _____.

- a. Nominal values
- b. Ordinal values
- c. Interval & Ratio values
- d. All of them

40. _____ are values that provide a name or identifier so that we can discriminate between different values.

- a. Nominal values
- b. Ordinal values
- c. Interval values
- d. Ratio values

41. _____ are data values that can be put in some natural sequence but do not allow any other type of computation.

- a. Nominal values
- b. Ordinal values
- c. Interval values
- d. Ratio values

42. _____ are quantitative, allows simple forms of computation like addition and subtraction, has no arithmetic zero value, and does not support multiplication or division.

- a. Nominal values
- b. Ordinal values
- c. Interval values

d. Ratio values

43. _____ allow all forms of arithmetic computation, have a natural zero value, and multiplication and division of values are possible.

- a. Nominal values
- b. Ordinal values
- c. Interval values
- d. Ratio values

44. Nominal and Ordinal data values are referred as qualitative data.

- a. True
- b. False

45. Interval and Ratio data is known as quantitative data.

- a. False
- b. True

46. Geographic objects exhibit which of the following characteristics?

- a. Coverage
- b. Connectedness
- c. Capacity
- d. All of them

47. _____ can be determined with almost arbitrary precision, dependent only on the data acquisition technique applied.

- a. Crisp boundary
- b. Fuzzy boundary
- c. Static boundary
- d. Dynamic boundary

48. _____ boundary is not a precise line, but rather itself an area of transition.

- a. Crisp
- b. Fuzzy
- c. Static
- d. Dynamic

49. _____ is a partitioning of space into mutually exclusive cells that together make up the complete study space.

- a. Modelling
- b. Prototyping
- c. Tessellation
- d. Digitizing

50. Once the data is entered it must be _____ and _____.

- a. Captured & Organized
- b. Verified & Edited
- c. Verified & Generalized
- d. Edited & Organized

51. The most common regular tessellation types are:

- a. Square cells
- b. Hexagonal cells
- c. Triangular cells
- d. All of them

52. Tessellations are also known as _____.

- a. Vectors
- b. Rasters
- c. Graphics
- d. Database

53. _____ is a set of regularly spaced (and contiguous) cells with associated (field) values.

- a. Model
- b. Raster
- c. Vector
- d. Layer

54. _____ is one of the standard implementation techniques for digital terrain models.

- a. TIN
- b. Layer
- c. Object
- d. Prototype

55. Triangulated irregular networks make use of _____ principle.

- a. Pythagoras
- b. Euclidean
- c. Delaunay triangulation
- d. Spatial autocorrelation

56. _____ are defined as single coordinate pairs (x; y) when we work in 2D, or coordinate triplets (x; y; z) when we work in 3D.

- a. Polygons
- b. Lines
- c. Points
- d. Fields

57. The two end nodes and zero or more internal nodes or vertices define a _____.

- a. Polygon
- b. Line
- c. Point
- d. Field

58. _____ refers to the spatial relationships between geographical elements in a data set that do not change under a continuous transformation.

- a. Polygon
- b. Field
- c. Object
- d. Topology

59. Identify simplices from given list:

- a. point & line segment
- b. triangle
- c. tetrahedron
- d. All of them

60. When we combine various simplices into a single feature, we obtain _____.

- a. simplicial complex
- b. tetrahedron
- c. field
- d. object

61. A 1:50,000 scale map means that 1 cm on the map represents _____ on terrain.

- a. 50000 m
- b. 50000 cm
- c. 50000 mm
- d. 50000 km

62. Large scale map means _____

- a. More details
- b. Less details
- c. Large size
- d. Small size

63. Small scale map means _____

- a. More details
- b. Less details
- c. Large size
- d. Small size

64. _____ is the time when an event really happened, or a string of events took place.

- a. Absolute time
- b. Relative time
- c. Valid time
- d. Transaction time

65. _____ is the time when the event was stored in the database or GIS.

- a. Absolute time
- b. Relative time
- c. Valid time
- d. Transaction time

Unit II

(Data management & processing system)

66. SDI stands for

- a. Spatial database instruction
- b. Spatial data infrastructure
- c. Spatial data induction
- d. Spatial database infrastructure

67. Standards for all facets of GIS are developed by

- a. NASA & ARCGIS
- b. ISRI & QGIS
- c. OGC & ISO
- d. NASA & ISRI

68. Software programs that act as an intermediate between geographic databases and the users of the web are _____.

- a. Geo web services
- b. GIS hardware
- c. Geo-databases
- d. GIS Software

69. Manual digitizing include _____

- a. scanner
- b. line-following software
- c. CD-ROM or DVD-ROM
- d. coordinate entry via keyboard

70. Automatic digitizing include _____

- a. scanner
- b. line-following software
- c. CD-ROM or DVD-ROM
- d. coordinate entry via keyboard

71. Semi-automatic digitizing include _____

- a. scanner
- b. line-following software
- c. CD-ROM or DVD-ROM
- d. coordinate entry via keyboard

72. Rasters are stored in a file as _____

- a. Image

- b. Audio
- c. Video
- d. Long list of values

73. Raster encoding scheme is known as _____

- a. Row ordering
- b. Column ordering
- c. Table ordering
- d. Document ordering

74. Combined activities to keep the data set up-to-date and as supportive as possible to the user community is called as _____.

- a. Data capturing
- b. Data presentation
- c. Data maintenance
- d. Data analysis

75. Category of information systems composed of a database, GIS software, models, and knowledge engine which allow users to deal specifically with locational problems is known as _____.

- a. Spatial decision support systems
- b. Spatial Database
- c. Relational data model
- d. Geo web services

76. Computing new information that provides new insight from the existing, stored spatial data is referred as _____.

- a. Data capturing
- b. Data presentation
- c. Data maintenance
- d. Data analysis

77. _____ is a software package that allows the user to set up, use and maintain a database.

- a. Spatial decision support systems
- b. DBMS
- c. data model
- d. Geo web services

78. _____ is a computer program that extracts data from the database that meet the specified conditions.

- a. Source code
- b. Vector layer
- c. Query
- d. Raster layer

79. For the relational data model, the structures used to define the database are

- _____.
- a. attributes, tuples & relations
 - b. rows & columns
 - c. vector & raster layers
 - d. cells & pixels

80. _____ allows tuples that meet the selection condition to pass, and disallows tuples that do not meet the condition.

- a. Attribute Projection
- b. Tuple selection
- c. Join
- d. None of them

81. _____ works like a tuple formatter: it passes through all tuples of the input, but reshapes each of them in the same way.

- a. Attribute Projection
- b. Tuple selection
- c. Join
- d. None of them

82. _____ operator takes two input relations and produces one output relation, if they meet a specified condition.

- a. Attribute Projection
- b. Tuple selection
- c. Join
- d. None of them

83. Spatial database includes

- a. storage of the relationships between features
- b. creation and storage of topological relationships
- c. spatial query
- d. all of the above

84. OGC refers to

- a. Open Geospatial Consortium
- b. Operational Geospatial Consortium
- c. Open Generic Consortium
- d. Operational Generic Consortium

85. Which of the following does not refer to a stage of spatial data handling?

- a. Spatial data capture and Preparation
- b. Spatial data storage and maintenance
- c. Spatial Query and Analysis
- d. Spatial data discussion and elevation

86. In GIS , the agricultural field is represented by

- a. Point
- b. Line
- c. Polygon
- d. Boundary

87. In GIS, the raster approach subdivides the object space into a number of 2D cells called

- a. Voxel
- b. Pixel
- c. Excel
- d. Digicell

88. In GIS, the raster approach subdivides the object space into a number of 3D cells called

- a. Voxel
- b. Pixel
- c. Excel
- d. Digicell

89. Which of the following is an advantage of raster data representation?

- a. less compact data structure
- b. difficulties in representing topology
- c. cell boundaries independent of feature boundaries
- d. simple data structure

90. Which of the following is disadvantage of vector data representation?

- a. efficient representation of topology
- b. adapts well to scale changes
- c. allows easy association with attribute data
- d. complex data structure

91. The set of tuples of a relation at any point of time is called as

- a. Relation instance
- b. Relation schema
- c. Relational model
- d. Field model

92. What is a tuple?

- a. A row or record in a database table.
- b. Another name for a table in an RDBMS.
- c. An attribute attached to a record.
- d. Another name for the key linking different tables in a database

93. Which of the following is true about DBMS

- a. A DBMS provides a high-level, 'declaration query language'
- b. A DBMS supports the use of a 'data model'
- c. A DBMS includes 'data backup' and 'recovery' functions to ensure data availability at all times
- d. All of the above

94. Among the following, which do not come under the components of GIS?

- a. Hardware
- b. Software
- c. Compiler
- d. Data

95. Which of the following is GIS software package?

- a. ILWIS
- b. ArcGIS
- c. QGIS
- d. All of the above

96. Table is a collection of tuples that are similarly shaped implies that

- a. All values for the same attribute are same
- b. All values of all attributes are same
- c. All values for the same attribute come from a single domain of values
- d. All records are same

97. Relation definition in the form of name of the relation, attributes and attribute domain is known as _____.

- a. Relation schema
- b. Foreign key
- c. Relation estimation
- d. Primary key

98. The relation schemas together make up the

- a. database schema
- b. foreign key
- c. database key
- d. database query

99. Identify incorrect statement about tuple.

- a. The set of tuples in a relation at some point in time is called the relation instance at that moment.
- b. Tuple set is always finite.
- c. Tuples are rows of the database table.
- d. All are correct.

Unit III**(Spatial referencing & positioning, Data entry & preparation)**

100. How many reference surfaces have been established to approximate the shape of the Earth?

- a. Three
- b. One
- c. Two
- d. Zero

101. Two reference surfaces are referred as

- a. Longitude & latitude
- b. Geoid & ellipsoid
- c. Ellipsoid & cuboid
- d. Ellipse & circle

102. The Geoid separation (N) is the deviation between _____

- a. Geoid and ellipsoid
- b. Longitude & latitude
- c. Ellipsoid & cuboid
- d. Ellipse & circle

103. Due to irregularities or mass anomalies in this distribution the global ocean results in an undulated surface. This surface is called _____.

- a. Ellipsoid
- b. Cuboid
- c. Geoid
- d. None of them

104. The geoid is used to describe

- a. Oceans
- b. Terrains
- c. Heights
- d. Weights

105. Reference surface used for the description of the horizontal coordinates of points of interest is _____.

- a. Ellipsoid
- b. Cuboid
- c. Geoid
- d. None of them

106. GPS uses the _____ as its reference system.

- a. WGS 84
- b. ITRF96
- c. ITRF 2000
- d. ITRS

107. Height h above the geocentric ellipsoid is measured

- a. Orthogonal to the ellipsoid
- b. Orthogonal to the Geoid
- c. Parallel to the ellipsoid
- d. Parallel to the geoid

108. Height H above the Geoid is

- a. Orthogonal to the ellipsoid
- b. Orthogonal to the Geoid
- c. Parallel to the ellipsoid
- d. Parallel to the geoid

109. The latitude and longitude represent

- a. 2D geographic coordinate system
- b. 3D geographic coordinate system
- c. Euclidean reference plane
- d. Pythagorean plane

110. By adding ellipsoidal height to longitude and latitude co-ordinates _____ is achieved.

- a. 2D geographic coordinate system
- b. 3D geographic coordinate system
- c. Euclidean reference plane
- d. Pythagorean plane

111. 3D geocentric coordinates have its origin at

- a. South pole
- b. North pole
- c. Equator
- d. Center of mass of earth

112. Classes of map projection are

- a. Cylindrical
- b. Conical
- c. Azimuthal
- d. All of the above

113. When the symmetry axes of the plane, cone and cylinder coincide with the rotation axis of the ellipsoid or sphere, the projection is said to be

- a. Normal Projection
- b. Transverse Projection
- c. Oblique Projection
- d. None of the above

114. When the symmetry axes of the plane, cone and cylinder coincide with the equator, the projection is said to be

- a. Normal Projection
- b. Transverse Projection

- c. Oblique Projection
- d. None of the above

115. When the symmetry axes is somewhere between the rotation axis and equator of the ellipsoid or sphere, the projection is said to be

- a. Normal Projection
- b. Transverse Projection
- c. Oblique Projection
- d. None of the above

116. Transforming geographic co-ordinates (ϕ, λ) of a point on the curved reference surface to a set of planar Cartesian coordinates $(x; y)$ is called

- a. Translation
- b. Inverse mapping
- c. Forward Mapping
- d. None of the above

117. Transforming planar Cartesian coordinates $(x; y)$ of a point to geographic co-ordinates (ϕ, λ) on the curved reference surface is called

- a. Translation
- b. Inverse mapping
- c. Forward Mapping
- d. None of the above

118. A satellite-based positioning system involves implementation of which of the segments?

- a. Space segment
- b. User segment
- c. Control segment
- d. All of the above

119. Radio message from a satellite includes

- a. the satellite identifier
- b. its position in orbit
- c. its clock reading
- d. all of the above

120. Apparent distance between satellite and the receiver, computed from the time delay with which its radio signal received is called _____.

- a. Pseudorange
- b. Pseudodistance
- c. Pseudoline
- d. pseudodisplacement

121. Principle behind working of GPS is

- a. Triangulation
- b. Trilateration

- c. Triangulated irregular network
- d. Pseudorange

122. User needs signal from minimum _____ satellites to fix his position with GPS.

- a. Zero
- b. One
- c. Three
- d. Two

123. User needs signal from minimum _____ satellites to fix his position as well as altitude with GPS.

- a. Zero
- b. One
- c. Four
- d. Two

124. What is the full form of RMSE?

- a. Raw method square error
- b. Regular mean square error
- c. Root mean square error
- d. Root method square error

125. Different sources of errors in absolute positioning are

- a. Errors related to the space segment
- b. Errors related to the medium & receiver's environment
- c. Errors related to the relative geometry of satellites and receiver
- d. All of the above

126. Errors related to space segment include

- a. operators of the control segment may intentionally deteriorate radio signal
- b. selective availability
- c. incorrect clock reading & orbit position
- d. All of the above

127. What is the full form of GDOP?

- a. geometric dilution of precision
- b. geographic dilution of precision
- c. geographic dimension of precision
- d. geometric dimension of precision

128. GDOP describes errors caused by

- a. Bad weather conditions
- b. Error caused by operator
- c. Incorrect clock reading
- d. relative position of the GPS satellites

129. Poor GDOP results in

- a. Lower quality GPS positioning
- b. Higher quality GPS positioning
- c. No GPS positioning
- d. 3D positioning

130. Various GPS satellite systems are

- a. NAVSTAR
- b. Galelio
- c. GLONASS
- d. All of them

131. When a radio signal is received via two or more paths between sender and receiver it is called

- a. Multiface signal
- b. Multimode signal
- c. Multipath signal
- d. Mutinode signal

132. Determining where an object is located on earth with respect to another object's location is called as _____

- a. Single point positioning
- b. Relative positioning
- c. Absolute positioning
- d. Relational positioning

133. GPS receiver determines the travel time of a signal from a satellite by comparing the pseudo random code. This is called as _____.

- a. Signal phase measurement
- b. Code phase measurement
- c. Frequency code measurement
- d. Wavelength code measurement

134. Measuring the range between a satellite and receiver by cycles of the carrier frequency is called _____.

- a. Code phase measurement
- b. Frequency code measurement
- c. Wavelength code measurement
- a. Carrier phase measurement

135. Direct spatial data acquisition techniques include

- a. Field surveys
- b. Remote sensing
- c. Existing maps
- d. Both a & b

136. Data which is captured directly from the environment is known as ____.

- a. Secondary Data
- b. Primary Data
- c. Digital Data
- d. Manmade Data

137. Data derived from existing paper maps through scanning, data digitized from a satellite image, processed data purchased from data capture firms or international agencies is known as ____.

- a. Secondary Data
- b. Primary Data
- c. Automated Data
- d. Manmade Data

138. Any data which is not captured directly from the environment is known as ____.

- a. Secondary Data
- b. Primary Data
- c. Automated Data
- d. Manmade Data

139. The process of distilling points, lines and polygons from a scanned image is called ____.

- a. Vectorization
- b. Rasterization
- c. Digitization
- d. Automation

140. Data about data is called ____.

- a. Digitized data
- b. Metadata
- c. Vector data
- d. Raster data

141. _____ refers to an agreed upon way of representing data in a system in terms of content, type and format.

- a. Data standard
- b. Data quality
- c. Data consistency
- d. Database

142. Accuracy & precision refers to

- a. Data standard
- b. Data quality
- c. Data consistency
- d. Database

143. An accurate measurement has a mean close to the _____ value.

- a. False
- b. True
- c. Zero
- d. Negative

144. A precise measurement has a sufficiently _____ variance.

- a. Small
- b. Large
- c. Negative
- d. Zero

145. Large errors resulting from human carelessness which could be avoided through careful observation are called _____.

- a. Systematic errors
- b. Gross errors
- c. Random errors
- d. False Errors

146. Errors in sign and magnitude that can go undetected by repeating the measurement with the same instrument are called _____.

- a. Systematic errors
- b. Gross errors
- c. Random errors
- d. False Errors

147. Errors that remain after gross errors and systematic errors have been removed are called _____.

- a. Systematic errors
- b. Gross errors
- c. Random errors
- d. False Errors

148. Many kinds of measurement can be naturally represented by a bell-shaped probability density function known as

- a. Gaussian distribution
- b. Euclidean distribution
- c. Pythagorean distribution
- d. Random distribution

- 149. _____ can be used to assess the probability that a particular set of measurements does not deviate too much from the true value.**
- Euclidean distribution
 - Root mean square error
 - Pythagorean distribution
 - Random distribution
- 150. _____ is defined at a fixed distance on either side of the line & the width of the band is based on an estimate of the probable error location of the line.**
- Epsilon or Perkal band
 - Gaussian band
 - Euclidean band
 - Random band
- 151. How many types of attribute accuracies can be identified?**
- One
 - Two
 - Three
 - Four
- 152. Accuracy of labelling is referred as _____.**
- Numerical data
 - Random data
 - Nominal data
 - Name data
- 153. Numerical accuracy is referred as _____.**
- Numerical data
 - Random data
 - Nominal data
 - Name data
- 154. _____ describes the history of a data set as part of the metadata.**
- Temporal accuracy
 - Attribute accuracy
 - Lineage
 - Completeness
- 155. _____ refers to whether there are data lacking in the database compared to what exists in the real world.**
- Temporal accuracy
 - Attribute accuracy
 - Lineage
 - Completeness

156. Mapping organizations maintain a single source database known as _____.

- a. Base data
- b. Raw data
- c. True data
- d. All of the above

157. Base data is _____ and contains all data required for the largest to smallest scale map to be produced.

- a. Dimension less
- b. Scale less
- c. Error less
- d. Information less

158. In _____ database, data is stored as elements to be printed on a map, including data on where to place name tags, and what colour to give them.

- a. Base
- b. True
- c. Relational
- d. Cartographic

159. Mapping organizations maintain a _____ data environment.

- a. Secure
- b. Friendly
- c. Multi-scale
- d. Redundant

160. Systems representing the same geographic phenomenon in different ways is known as _____.

- a. Secure
- b. Friendly
- c. Multi-representation
- d. Redundant

161. _____ is the process of joining two or more map sheets after they have separately been digitized.

- a. Edge matching
- b. Paper matching
- c. Map matching
- d. Co-ordinate matching

162. Conversion between data formats of different systems or representations is referred as _____.

- a. Edge matching
- b. Format transformation
- c. Graphic element editing
- d. Coordinate thinning

163. Manual editing of digitized features so as to correct errors, and to prepare a clean data set for topology building is referred as _____.

- a. Edge matching
- b. Format transformation
- c. Graphic element editing
- d. Coordinate thinning

164. A process often applied to remove redundant or excess vertices from line representations, as obtained from digitizing is _____.

- a. Edge matching
- b. Format transformation
- c. Graphic element editing
- d. Coordinate thinning

165. Calculation of a value from surrounding observations is called as ____.

- a. Integration
- b. Assumption
- c. Derivation
- d. Interpolation

166. Estimating unknown values from known points is known as _____.

- a. Integration
- b. Assumption
- c. Derivation
- d. Interpolation

167. For discrete fields, data values are of which nature?

- a. Quantitative
- b. Qualitative
- c. Both of them
- d. None of them

168. For continuous fields, data values are of which nature?

- e. Quantitative
- f. Qualitative
- g. Both of them
- h. None of them

169. While dealing with discrete data, we are restricted to using

- a. nearest-neighbour interpolation
- b. Piecewise constant interpolation
- c. Linear interpolation
- d. Polynomial interpolation

170. _____ are used for nearest neighbour interpolation.

- a. Equilateral triangle
- b. Sphere
- c. Thiessen polygon
- d. Geoid

171. For interpolation of continuous data which technique is available?

- a. Trend surface fitting using regression
- b. Triangulation
- c. Spatial moving averages using inverse distance weighting
- d. All of the above

172. Coefficients of trend surface fitting can be determined by _____ techniques.

- a. Interpolation
- b. Regression
- c. Integration
- d. Derivation

173. Triangulated Irregular Networks technique constructs a triangulation of the study area such that triangulation should be a _____.

- a. Delaunay triangulation
- b. Kriging
- c. Trend surface fitting
- d. Regressive

174. Semivariogram is a critical component of generating any _____ model.

- a. Kriging
- b. Trend surface fitting
- c. Inverse distance weighting
- d. Regression

175. What is the reference surface for heights?

- a. Ellipsoid
- b. Geoid
- c. Sphere
- d. Mountains

176. What is the reference surface for the description of the horizontal coordinates of points of interest?

- a. Ellipsoid
- b. Geoid
- c. Sphere
- d. Mountains

- 177. An ellipsoid is formed when an ellipse is rotated about its**
- Major axis
 - Minor axis
 - Eccentricity
 - Semi major axis
- 178. An ellipsoid is positioned and oriented with respect to the local mean sea level by adopting a latitude and longitude and ellipsoidal height of a fundamental point. This is called as**
- Local vertical datum
 - Global vertical datum
 - Local horizontal datum
 - Global horizontal datum
- 179. The most important global spatial reference system for the GIS community is**
- International Terrestrial Reference System (ITRS)
 - International Terrestrial Reference Frame (ITRF)
 - World Geodetic System 1984 (WGS84)
 - Open geospatial consortium (OGC)
- 180. ITRF2000 or WGS84, are called geocentric datums because they are positioned with respect to the**
- South pole
 - North pole
 - Centre of mass of the Earth
 - Equator

Unit IV

(Spatial data analysis)

- 181. _____ allows the assignment of features to a class on the basis of attribute values.**
- Classification
 - Retrieval
 - Generalization
 - Estimation
- 182. _____ functions allow the selective search of data.**
- Classification
 - Retrieval
 - Generalization
 - Estimation
- 183. _____ is a function that joins different classes of objects with common characteristics to a higher level generalized class.**
- Classification

- b. Retrieval
- c. Generalization
- d. Estimation

184. _____ functions allow the calculation of distances, lengths, or areas.

- a. Classification
- b. Retrieval
- c. Generalization
- d. Measurement

185. _____ function allows the combination of two (or more) spatial data layers comparing them position by position, and treating areas of overlap and of non-overlap in distinct ways.

- a. Classification
- b. Retrieval
- c. Generalization
- d. Overlay

186. Which function evaluates the characteristics of an area surrounding feature's location?

- a. Neighbourhood
- b. Overlay
- c. Classification
- d. Retrieval

187. Which neighbourhood function determines a spatial envelope (buffer) around given feature?

- a. Buffer zone generation
- b. Overlay
- c. Classification
- d. Retrieval

188. Computation that can be performed by topographic function is

- a. Determination of slope angle
- b. Determination of slope aspect
- c. Determination of slope length
- d. All of the above

189. Which function works on the basis of networks for example road networks, water courses in coastal zones, and communication lines in mobile telephony?

- a. Connectivity
- b. Overlay
- c. Classification
- d. Retrieval

190. Contiguity function, network analytic function and visibility function are a part of _____ function.

- a. Connectivity
- b. Overlay
- c. Classification
- d. Retrieval

191. Search function, buffer zone generation, interpolation and topographic function are a part of _____ function.

- a. Overlay
- b. Classification
- c. Retrieval
- d. Neighbourhood

192. Analytical capabilities of a GIS use _____ data to answer questions about real-world.

- a. Spatial and non-spatial
- b. Static and dynamic
- c. True and false
- d. New and old

193. Distance between two feature points say p and q, is calculated by_____.

- a. Root mean square error
- b. Pythagorean distance function
- c. Regression
- d. Integration

194. Select spatial selection query from given options.

- a. Interactive spatial selection
- b. Spatial selection by attribute condition
- c. Spatial selection using topological relationship
- d. All of the above

195. _____ is a technique of purposefully removing detail from an input data set to reveal important patterns of spatial distribution.

- a. Classification
- b. Regression
- c. Retrieval
- d. derivation

196. Type of classification is

- a. User controlled
- b. Automatic
- c. Static
- d. Both a & b

197. In _____ classification user only specifies the number of classes in the output data set and system automatically determines the class break points.

- a. Automatic

- b. User controlled
- c. Static
- d. dynamic

198. Two main techniques of determining class break points in automatic classification are

- a. Equal value & Equal occurrence
- b. Equal interval & Equal frequency
- c. Equal phase & Equal frequency
- d. Equal interval & Equal phase

199. In _____ classification, a user selects the attributes that will be used as the classification parameters and defines the classification method.

- a. Automatic
- b. Equal interval
- c. User-controlled
- d. Equal frequency

200. Two polygon layers A and B produce a new polygon layer that contains all intersections of polygons from A and B. this is called _____.

- a. Raster overlay
- b. Raster intersection
- c. Vector overlay
- d. Vector division

201. Polygon clipping and polygon overwrite are _____ operations.

- a. Raster overlay
- b. Raster intersection
- c. Polygon division
- d. Polygon overlay

202. GISs that support raster processing usually have a language to express operations on rasters. These languages are generally referred to as _____.

- a. Map algebra
- b. Raster algebra
- c. Vector algebra
- d. GIS algebra

203. Which of the following overlay methods would you use to calculate the length of road within a forest polygon?

- a. Union
- b. Point in polygon
- c. Line in polygon
- d. Polygon in polygon

204. The standard overlay operator for two layers of polygons is _____.

- a. Polygon intersection operator
- b. Polygon clipping operator

- c. Polygon Overwrite operator
- d. All of the above

205. Determination of contour lines comes under which type of function?

- a. Classification
- b. Overlay
- c. Neighbourhood
- d. Connectivity

206. Which function allow the retrieval of features that fall within a given search window?

- a. Classification
- b. Overlay
- c. Search
- d. Buffer zone generation

207. Intersection, union, difference and complement are the operations of which function?

- a. Classification
- b. Overlay
- c. Neighbourhood
- d. Connectivity

208. Geometric measurement on spatial features includes which of the following computations?

- a. Counting
- b. Distance
- c. Area size
- d. All of the above

209. What are the primitives of vector data set?

- a. Point
- b. Polyline
- c. Polygon
- d. All of them

210. Select properties of vector features.

- a. Location
- b. Length
- c. Area
- d. All

211. The anchor point is fixed by convention to be _____ location of the raster.

- a. Lower left
- b. Lower right
- c. Upper right
- d. Center

212. Raster's anchor point, the cell resolution, and the position of the cell in the raster determine _____.

- a. Location of an individual cell
- b. Size of individual cell
- c. Width of cell
- d. Height of cell

213. _____ is calculated as the number of cells multiplied by the cell area size.

- a. Location of an individual cell
- b. Size of individual cell
- c. Width of cell
- d. Area of raster

214. The interactively defined selection objects like points, lines, or polygons are used in which type of query?

- a. Interactive spatial selection
- b. Spatial selection by attribute
- c. Combined attribute condition
- d. Spatial selection using topological selection

215. $\text{Area} < 400000$ is which type of query?

- a. Interactive spatial selection
- b. Spatial selection by attribute
- c. Combined attribute condition
- d. Spatial selection using topological selection

216. $\text{Land use} = 80$ is which type of query?

- a. Interactive spatial selection
- b. Spatial selection by attribute
- c. Combined attribute condition
- d. Spatial selection using topological selection

217. $\text{Area} < 400000$ AND $\text{Land use} = 80$ is which type of query?

- a. Interactive spatial selection
- b. Spatial selection by attribute
- c. Combined attribute condition
- d. Spatial selection using topological selection

218. NOT ($\text{LandUse} = 80$) would select

- a. All areas with land use class 100
- b. All areas with land use class 80
- c. all areas with a different land use class than 80
- d. all areas with land use class 80 & 100

219. NOT ($\text{LandUse} = 80$) can also be written as

- a. $\text{LandUse} < > 80$

- b. LandUse > 80
- c. LandUse < 80
- d. LandUse = 80

220. Which type of query uses containment relationship?

- a. Attribute projection query
- b. Point in polygon query
- c. Tuple selection query
- d. Join selection query

221. Standard arithmetic operators in raster overlay operation are

- a. Addition & Subtraction
- b. Multiplication
- c. Integer & Modulo Division
- d. All of the above

222. Map algebra equation $C1 := A + 10$ denotes:

- a. add a constant factor of 10 to all cell values of raster A and store the result as output raster C1
- b. add a constant factor of 10 to first cell value of raster A and store the result as output raster C1
- c. add a constant factor of 10 to all first row values of raster A and store the result as output raster C1
- d. add a constant factor of 10 to all first column values of raster A and store the result as output raster C1

223. Assignment $C2 := A + B$

- a. Will add two constants A and B and store the result in C2
- b. Will add the values of A and B cell by cell, and store the result as raster C2
- c. Will add the first values of A and B and store the result as raster C2
- d. Will add the anchor point values of A and B and store the result as raster C2

224. Which of the following is not standard comparison operator of raster overlay operation?

- a. < >
- b. > <
- c. =
- d. <

225. Comparison & logical operators will store values in output raster as

- a. Imaginary values
- b. Numerical values
- c. True & False
- d. Zero

226. Output raster:= CON(condition; then expression; else expression) means:

- a. condition is the tested condition, then expression is evaluated if condition holds, and else expression is evaluated if it does not hold
- b. condition is the tested condition, then expression is evaluated if condition does not hold, and else expression is evaluated if it hold
- c. none of the above
- d. both are correct

227. In given assignment CON(A = forest; 10; 0)

- a. Forest is else statement, 10 is then statement & 0 is condition
- b. Forest is condition, 10 is then statement & 0 is else statement
- c. Forest is then statement, 10 is condition & 0 is else statement
- d. Forest is condition, 10 is else statement & 0 is then statement

228. Given assignment CON(A = forest; 10; 0) will evaluate to

- a. 10 for each cell in the output raster where the same cell in A is classified as forest.
- b. 0 for each cell in the output raster where the same cell in A is classified as forest.
- c. Forest for each cell in the output raster where the same cell in A is classified as 10
- d. Forest for each cell in the output raster where the same cell in A is classified as 0