KATHMANDU UNIVERSITY
End Semester Examination
March/April, 2017

Marks scored:

Level : B. E.
Year : III
Course : CIEG 302
Semester : I
Exam Roll No. :
Time: 30 mins.
F. M. : 10
Registration No.:
Date : MAR 3 0 2017

SECTION "A"
[20 Q × 0.5 =10 marks]

Multiple Choice Question, (tick the most appropriate answer).

1. Feature in GIS is composed of
   a. Point, line or polygon b. Raster cells c. elevation models d. vector data

2. Irradiance is measured in one of the following unit.
   a. W/m2 b. W/cycle c. W/m2/Sr d. W/day

3. A graphical vector structure contains
   a. No explicit information about topology
   b. Only about adjacency and containment
   c. Explicit topological rules
   d. Adjacent relation between features

4. A seasonal change analysis satellite is placed in following orbit
   a. Molanya
   b. Geostationary
   c. Geosynchronous
   d. Sunsynchronous

5. As a rule of thumb, the minimum number of pixel that a sample should contain during supervised classification is (where k=no of bands)
   a. 50 K b. 100 K c. 10 K d. 20 K

6. A cloud appears white when the reflection in Red, Green and Blue band is
   a. 30 % in all bands
   b. 50% in all bands
   c. 100% in all bands
   d. None of above

7. Why does radiometric resolution has to be higher
   a. To capture the temporal variation of feature energy
   b. To capture the details in energy reflected
   c. To capture the spatial details
   d. To capture the spectral details

8. We can differentiate a tree from nearby pole in visual image interpretation using
   a. Size b. Shadow c. Height d. Texture

9. In an unsupervised classification approach,
   a. An algorithm supervises all process
   b. When a user provide instruction to algorithm
   c. When the distance is minimum
   d. None of above

10. A physical model of data abstraction defines
   a. The group of objects to be represented in GIS
   b. Various data structure that can store features
   c. Logic behind the feature representation
   d. Various data models to represent features

11. Which of the following is true in raster topology
    a. The topological relationship has to defined by providing topological tables
    b. The topological relationship can be defined by providing the coordinate system
    c. The topological relationship is already embedded in the data structure
    d. The model is advanced than spaghetti vector data model

12. What happens when we intersect road network with ward area?
    a. Output will be wards with number of number of road network
    b. Output will be road network with ward number
    c. Output will have all the data values
    d. Output will be number of wards

13. Which one of the following is the characteristics of an relational DBMS
    a. Queries are possible on individual or groups of tables
    b. It uses SYL for queries
    c. One to many relationship is not permitted
    d. Keys may be unique or have multiple occurrences in the database

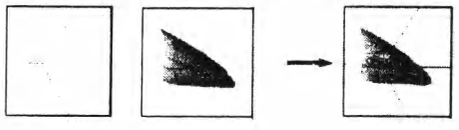
14. Spectral reflectance curve provides with the
    a. Reflectance of atmospheric particulates
    b. Reflectance of the earth surface features
    c. Reflection with respect to wavelength from earth surface features
    d. Reflection of earth's people behavior

15. In optical imagery, shadows are caused by
    a. Rayleigh and Mie scattering in the atmosphere
    b. Absorption in the atmosphere and absorption by the objects on the Earth
    c. Non-selective scattering in the atmosphere
    d. Absorption by atmospheric moisture

16. In GIS based software buffers are created as
    a. Lines in new layer
    b. Polygons in new layer
    c. Polyline in new layer
    d. Multi-curves in new layer

17. Mean average temperatures (like 10^0C, 20^0C, 30^0C) have to be represented in a map. The measurement scale of these temperature data is...
    a. Nominal
    b. Interval
    c. Ordinal
    d. Ratio

18. What is the name of overlay operation shown in figure below:



    a. Clip b. Buffer c. Merge d. Mask

19. What would be a typical topological relationship for a following question? Find all the parcels that border the road.
    a. ... is disjoint from... b. ... meets... c. ... overlaps... d. ... is covered by...

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

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SECTION "B"

Attempt *ANY EIGHT* questions.

1. What is GIS? Discuss how hydropower development can use remote sensing and GIS. [2+3=5]
2. Why is classification necessary for remotely sensed images? Describe k-means approach of unsupervised classification. [2+3=5]
3. What is spatial analysis? Illustrate raster overlay analysis with examples. [2+3=5]
4. What is topology? How is topology maintained in point, line and polygon? Explain with figure and tables. [2+3=5]
5. Explain the tradeoff between the resolutions of satellite remote sensors? If you want to map the precipitation of an area, which type of resolution will be the best, Discuss. [2+3=5]
6. How is reality codified? Explain vector overlay using examples. [2+3=5]
7. Why do you need DBMS in GIS? Explain relational DBMS with examples. [2+3=5]
8. What is atmospheric window? Discuss the effect of atmosphere in remote sensing. [5]
9. Answer *ANY TWO* [2.5 × 2=5]
   a. Radiance
   b. Pushbroom Scanner
   c. Minimum distance classifier
   d. Visual image interpretation