Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.TECH (CSE)/SEM-8/CS-802C/2012

2012

GIS AND REMOTE SENSING

Time Allotted : 3 Hours   *Full Marks* : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

                                        10 × 1 = 10

    i)   Which of the following is not a GIS package ?
         a) ArcGIS   b) MapInfo
         c) Indrisi32   d) Netscape.

    ii) Spatial referencing is the process of which of the
         following ?
         a) Referencing Geo-relational tables
         b) Establishing the topology of spatial objects
         c) Computing the reference between items in
             databases
         d) Combining attribute values with locational
             information.

8304   [Turn over

iii) Which of the following is not an example of spatial data ?

    a) Lines showing the routes of linear objects

    b) Times of particular events

    c) Points showing location of discrete objects

    d) Polygons showing the area occupied by a particular landuse or variable.

iv) Universal Transverse Mercator is a

    a) map projection type

    b) datum

    c) data structure of GIS

    d) none of these.

v) Which band is appropriate for remote sensing vegetation analysis ?

    a) Red   b) Green

    c) Infrared   d) Short wave infrared.

vi) The reflectance of pure water is maximum in the

    a) red region   b) blue region

    c) green region   d) infrared region.

vii) Panchromatic imagery has

    a) two bands   b) one band

    c) three bands   d) four bands.

viii) IRS P6-LISS4 is .... in nature.

    a) panchromatic   b) multispectral

    c) hyperspectral   d) ultraspectral.

ix) The assignment of geographic coordinates to locations in maps is known as

    a) Map projection

    b) Geometric correction

    c) Radiometric correction

    d) None of these.
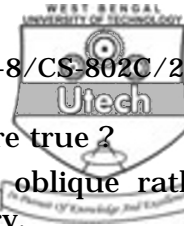
x) Which of the following statement(s) is/are true ?

a) A greater area can be covered in oblique rather than vertical remote sensing imagery.

b) An equal area is covered by both vertical and oblique remote sensing imagery.

c) A greater area can be covered in vertical rather than oblique remote sensing imagery.

d) All of these.

xi) Remote sensing is ideal for use in physical geography because

a) it minimizes the need for field work in dangerous, isolated and sensitive area

b) it can monitor change over time

c) it will always be more reliable than field work studies

d) it can be applied at any scale.

xii) Which of the following is not a method of energy scattering in the atmosphere ?

a) Rayleigh scattering

b) Mie scattering

c) Non-selective scattering

d) Amalgamated scattering.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. What is GIS ? How is it related to remote sensing ?   2 + 3

3. How does GIS perform spatial analysis of data ?

4. Give an example of entity and attribute in a traditional paper map system. Write three differences between traditional paper map system and the GIS.   2 + 3

5. Discuss electromagnetic spectrum as a principle behind remote sensing.

6. How do chlorophyll content, leaf structure and leaf water content affect the spectral characteristics of vegetation ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. What is a map projection ? Explain the classification of maps. How is projection system used to portray the earth's surface on a map ? What problems are associated with projecting the earth's surface on a two-dimensional map ?

2 + 3 + 5 + 5

8. Define remote sensing. What are the components of remote sensing ? Define active and passive remote sensing. Explain in detail the platforms of remote sensing. What are the three common applications for remote sensing imagery ?

2 + 3 + 3 + 4 + 3

9. What are the advantages of using software engineering approach for GIS implementation ? Draw a project network diagram for project planning and project scheduling of a GIS. Explain E.M. Principle of remote sensing.   5 + 5 + 5

10. a) Why are database management systems so important in GIS ? State their functions.   3 + 4

    b) What is vector and raster data model ?   4

    c) How is a Digital Elevation Model created in GIS ?   2 + 2

11. Write short notes on any *three* of the following :   3 × 5
    a) Geographic Co-ordinate System
    b) Embedded GIS
    c) Integrated spatial analysis
    d) Global Positioning System
    e) Remote sensing of vegetation.

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