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CS/B.Tech (ECE-N)/SEM-8/EC-804D/2010

2010

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 : $10 \times 1 = 10$

   i) Microwave radar band is

   a) 1 mm to 10 mm b) 1 mm to 100 mm

   c) 1 mm to 5 mm d) 5 mm to 10 mm.

   ii) Whavelength associated with a quantum of energy is

   a) $\lambda = hc/Q$ b) $\lambda = Q/hc$

   c) $\lambda = h/cQ$ d) $\lambda = c/hQ$.

   iii) A computer based information system used to digitally represent and analyses the geospatial data or geographic data is

   a) A GPS b) Landsat

   c) A GIS d) None of these.

iv) Precise measurement of Earth features can be obtained by

a) high oblique photographs

b) low oblique photographs

c) vertical aerial photographs

d) all of these types of photographs.

v) Lines connecting points of equal air temperature are known as

a) Isohyets b) Isotherms

c) Isobars d) Contour lines.

vi) LIDAR has been conceived as a method to directly and accurately capture

a) Digital surfaces

b) Analog surfaces

c) Both analog and digital surfaces

d) None of these.

vii) Which technology can be used for day or night data collection ?

a) Radar b) LIDAR

c) Photogrammetry d) Sonar.

viii) To replace film-based aerial cameras, enabling small, medium or large-scale mapping we use

a) Metric cameras

b) Stereometric cameras

c) Digital Metric Cameras

d) Amateur cameras.

ix) To obtain the information about the Earth's weather, what type of satellite is used for remote sensing of the Earth ?

a) Meteorological type satellites

b) Oceanographic type satellites

c) Terrestrial type satellites

d) None of these.

x) Terrestrial satellites are used to obtain

a) Earth's weather b) Earth's land surface

c) Earth's oceans d) None of these.

xi) Ground coordinate system are usually expressed in

a) feet or metres b) feet or cms

c) feet or inches d) inches or metres.

xii) The internal geometry of a digital camera is defined by specifying

a) only focal length

b) both focal length and pixed size of CCD

c) only pixel size of CCD

d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. What is remote sensing ? Explain about the components of a remote sensing system ?
3. What are the functions of GIS ? State some adantages of GIS.
4. Differentiate between global noise and periodic noise. Explain about electromagnetic spectrum ?
5. Explain about mobile GIS.
6. What is photogrammetry ? Explain the workflow of a photogrammetry ?

GROUP – C

(Long Answer Type Questions)

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

7. What is GPS system ? Write down the several functional segments of GPS. Explain the working principle of GPS. 2 + 8 + 5

8. a) What is digital image processing ?

   b) Explain the following related to digital image processing :

      i) Data formats of digits image.

      ii) Metadata of digital image.

      iii) Display of digital image. 3 + 4 + 4 + 4

9. Explain about the use of GIS in multimedia. Discuss about 3D GIS and mobile GIS. 5 + 5 + 5

10. What are active and passive microwave remote sensing ? Explain about electromagnetic spectrum. 5 + 5 + 5

11. Write short notes on any *three* of the following : 3 × 5

    a) Potential and limitations for remote sensing of sea, land and ice using GPS reflected signals

    b) Advantage and disadvantages of remote sensing for land evaluation

    c) Collaborative GIS (CGIS)

    d) LIDAR

    e) 3D representation of DEM.