

KATHMANDU UNIVERSITY
End Semester Examination
January/February 2024

Level : B.E.
Year : III
Time : 2 hrs. 30 mins.

12 FEB 2024

Course : CIEG 302
Semester : I
F.M. : 40

SECTION "B"

[4Q. × 10 = 40 marks]

Attempt *ALL* questions.

1.
 - a. How are the data obtained from remote sensing satellite? Explain. [3]
 - b. Write in short about the history of aerial photographs. [2]
 - c. What do you understand by Raster and Vector data? Compare it. Explain different vector data formats. [3+2]
2.
 - a. Define GIS and discuss various components of GIS. [1+4]
 - b. Briefly outline the pre-processing stages of radiometric calibration and geometric correction that are typically applied to remotely sensed data in converting from raw DN to at-sensor radiance. [5]
3.
 - a. Define Spectral Signature. Discuss on the Spectral Reflectance Characteristics of water and vegetation in different spectral bands. [1+4]
 - b. What is colour composite? Enumerate the use of various colour composite in Remote Sensing and GIS. [1+2]
 - c. Write about the UTM and MUTM coordinate system. [2]
4.
 - a. What is an orbit of the Satellite? Explain Geosynchronous orbits with their advantages in our daily life. [1+4]
 - b. Define Catchment. Write step by step procedure for the generation of the catchment and calculation of the catchment area in QGIS. [1+4]

1000

KATHMANDU UNIVERSITY
End Semester Examination
January/February 2024

Marks Scored:

Level : B.E.

Year : III

Exam Roll No. :

Registration No.:

12 FEB 2024

Time: 30 mins.

Course : CIEG 302

Semester : I

F. M. : 10

Date :

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices.

- Landsat program began in
a. 1972 b. 2003 c. 1973 d. 1937
- A sensor's ability to determine fine differences in a band of energy measurements is a sensor's
a. Spectral resolution b. Spatial resolution
c. Radiometric resolution d. Temporal resolution
- The instruments which provide electromagnetic radiation of specified wavelength or a band of wavelengths to illuminate the earth surface, are called:
a. Passive sensors b. Active sensors c. Sensors d. Flash gun
- Which one is the **CORRECT** statement from the following?
a. An increase of phytoplankton increases the backscattering in the green region
b. An increase of phytoplankton decreases the backscattering in the green region
c. Phytoplankton contains photo-synthetically active pigment
d. An increase of phytoplankton absorbs the blue region rapidly
- Which of the following is not a type of image resolution that is very important in image analysis?
a. Spectral b. spatial c. energy d. temporal
- DEM is necessary for studying which of the following
a. Soil Moisture Estimation b. Ground Water Analysis
c. Watershed Management d. Land Cover Changes
- The key of interpretation which gives an idea of the profile and relative height of an object
a. shape b. tone c. pattern d. shadow
- Which of the following statement is **FALSE**?
a. 'Fields' are geographic phenomena that occur everywhere in study area.
b. 'Objects' are geographic phenomena that occur 'densely' in study area.
c. Fields can be continuous or discrete.
d. Objects can be classified based on location, shape, size and orientation
- Which among these governs the relationship between various vector features in a map?
a. Map scale b. Pixel size c. Topology d. Map Coordinates

10. Spatial relationship can best be defined as
 - a. Associations of technology and exploration on geography.
 - b. The relationship between things that are far apart
 - c. Recurring patterns of things in connection with other things
 - d. The relationship between things in one specific area
11. Gamma rays have greatest similarity with
 - a. α -rays
 - b. γ -rays
 - c. X-rays
 - d. UV rays
12. Environmental GIS describes the use of
 - a. Data on atmospheric absorption of radiation
 - b. Electromagnetic energy in very specific regions
 - c. Location-based data management tools to assist in the decision-making processes
 - d. Electromagnetic energy in wide regions
13. For interpolation of satellite data used for monitoring dynamic changes that occur on the earth surface, the most suitable orbit for the satellite is:
 - a. Sun-Synchronous Orbit
 - b. Elliptical Orbit
 - c. Near Polar Orbit
 - d. Circular Orbit
14. Which is the first fundamental step in image processing?
 - a. Filtration
 - b. Image acquisition
 - c. Image enhancement
 - d. Image restoration
15. The orbit of a polar satellite is
 - a. Elliptical
 - b. Spherical
 - c. Helical
 - d. Circular
16. Which type of scattering will be more prominent in a polluted environment?
 - a. Rayleigh Scattering
 - b. Mie Scattering
 - c. Non-Selective Scattering
 - d. Raman Scattering
17. The part of radiation due to scattered/diffused radiation entering the field of view of a remote sensor other than that from the required target,
 - a. Reduces the contrast but increases the sharpness
 - b. Increases the contrast of the image but reduces the sharpness
 - c. Increases both the contrast and sharpness
 - d. Reduces the contrast but increases the sharpness.
18. The instruments which provide electromagnetic radiation of specified wavelength or a band of wavelengths to illuminate the earth surface, are called:
 - a. Passive sensors
 - b. Active sensors
 - c. Sensors
 - d. Flash gun
19. Which among these can be an active medium of Remote Sensing?
 - a. Eye
 - b. Radiometer
 - c. Radar
 - d. Digital Camera
20. Environmental GIS describes the use of
 - a. Data on atmospheric absorption of radiation
 - b. Electromagnetic energy in very specific regions
 - c. Location based data management tools to assist in the decision making processes
 - d. Electromagnetic energy in wide regions