



Roll No																			
---------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING**

**TEST 1**

**Winter Semester:** 2021 - 22

**Course Code:** PET 320

**Course Name:** Remote Sensing & GIS

**Program & Sem:** B. Tech & VI Sem

**Date:** 26<sup>th</sup> April 2022

**Time:** 01.30 PM to 02.30 PM

**Max Marks:** 30

**Weightage:** 15%

**Instructions:**

- (i) Read the all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

**Part A [Memory Recall Questions]**

**Answer both the Questions. Each question carries FIVE marks.**

**(2Qx 5M= 10M)**

1. Answer the following. (C.O.No.1) [Knowledge]
  - i. A map scale is a ratio of \_\_\_\_\_ on a map to the actual ground
  - ii. \_\_\_\_\_ is a rendition of an irregular spheroidal shape
  - iii. \_\_\_\_\_ on the site is portrayed as a series of contour lines
  - iv. The traditional method of storing, analyzing and presenting spatial data is the \_\_\_\_\_
  - v. If we wrap a sheet of paper round the globe in the form of a cylinder, transfer the geographical features of the globe on to it, and then unroll the sheet and lay off on a flat surface, we would achieve a \_\_\_\_\_
2. Define map scale? Identify the relationship between ratio and map scale with the help of example.

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries FOUR marks.**

**(3Qx4M=12M)**

3. The classification of map projections should follow a standard pattern so that any regular projection can be described by a set of criteria and conversely a set of criteria will define a regular projection. Then, how do you flatten a spherical world onto paper? From, the above given statement, explain the criterions for the classification scheme (C.O.No.1) [Comprehension]

4. "A map is a representation of the features of the earth drawn to scale". On account of the statement given above, explain how maps act as a filter for the information to pass through.
5. "The application of computer methods for mapping leads to cartographic accuracy and good graphical results". Justify the statement.

### **Part C [Problem Solving Questions]**

**Answer all the Questions. Each question carries TWO marks.**

**(4Qx2M=8M)**

6.
  - i. How do you show hills on a flat map? (C.O.No. 1) [Application]
  - ii. "Distances are true only along equator and are reasonable correct". The statement given above is concerned about which type of map projection. Identify and substantiate.
  - iii. "The usefulness of Mercator projections is limited in the polar regions of the planet". Why?
  - iv. what does 1:250,000 on a map mean?



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**SCHOOL OF ENGINEERING**

**TEST 2**

**Winter Semester:** 2021 - 22

**Course Code:** PET 320

**Course Name:** Remote Sensing & GIS

**Program & Sem:** B. Tech, VI Sem

**Date:** 1<sup>st</sup> June 2022

**Time:** 01.30 PM to 02.30 PM

**Max Marks:** 30

**Weightage:** 15%

**Instructions:**

(iv) Read the all questions carefully and answer accordingly.

(v) Question paper consists of 3 parts.

(vi) Scientific and Non-programmable calculators are permitted.

**Part A [Memory Recall Questions]**

**Answer both the Questions. Each question carries FIVE marks.**

**(2Qx 5M= 10M)**

(C.O.No.2) [Knowledge]

7. Identify the TRUE or FALSE statements

- vi. The region of the spectrum composed of electromagnetic radiation with wavelength between 1 mm and 1 m is called IR band.
- vii. Mirror Stereoscope has two large wing mirrors and two smaller eye piece mirrors.
- viii. The radiometric resolution is directly proportional to contrast.
- ix. Microwave system uses radiometers for detecting energy from terrain elements.
- x. Fine textured patterns develop where the soils and rocks have poor internal drainage and high surface run-off.

8. Remotely sensed raw data, received from imaging sensor mounted on satellite platforms generally contain flaws and deficiencies. What can be done for rectifying the problem before processing the data? (C.O.No.3) [Knowledge]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries FOUR marks.**

**(3Qx4M=12M)**

(C.O.No.3) [Comprehension]

9. There are several characteristics associated with the image remote sensing instrument operating in visible and IR spectral bands. Because, detectors are sensitive to a particular region in which the sensor is designed to operate and produce outputs which are representative of the observed area. Explain how these characteristics are capable of detecting the energy reflected from earth surface features. (Sensor Parameters)

10. Our eyes inform us that the atmosphere is essentially transparent to light, and we tend to assume that this condition exists for all Electromagnetic radiation. Explain how these particles and gases in the atmosphere can affect the incoming light and radiation. (C.O.No.2) [Comprehension]

11. Radiation is absorbed through electron or molecular reactions within the medium encountered. Justify this statement (C.O.No.2) [Comprehension]

**Part C [Problem Solving Questions]**

Answer both the Questions. Each question carries FOUR marks.

(2Qx4M=8M)

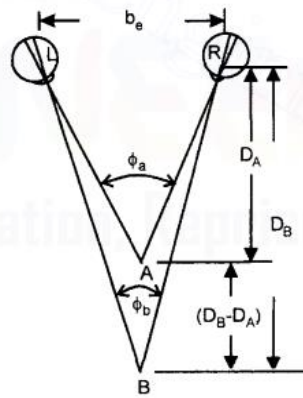


Figure: 1

12. "The basic requirement for 3-D interpretation method is overlapping photographs". Using the figure given above, explain how to obtain a three-dimensional view of terrain. (C.O.No.3) [Application]
13. What happens when particles or large gas molecules present in the atmosphere interact and cause the electromagnetic radiation to be redirected from its original path? Explain the same using the Figure (2) provided below. (C.O.No.2) [Application]

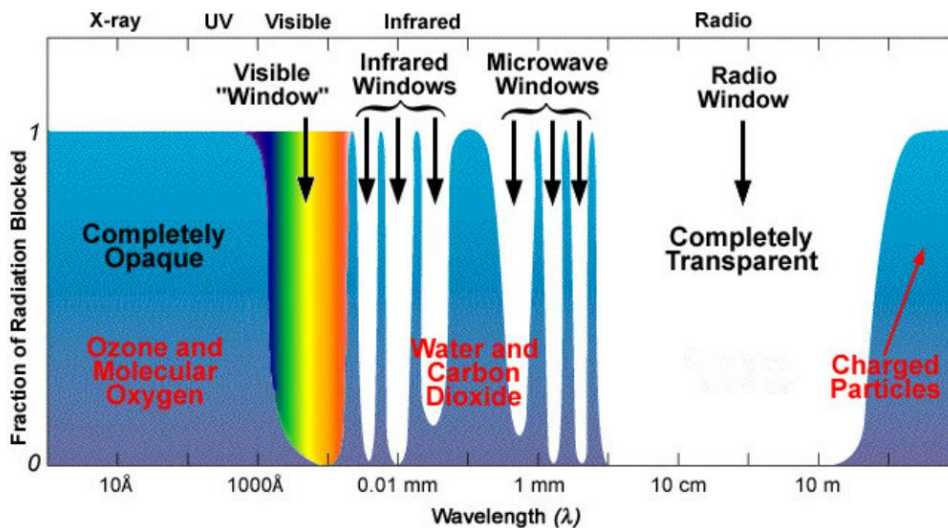


Figure: 2



**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING**

**END TERM EXAMINATION**

**Winter Semester:** 2021 - 22

**Course Code:** PET 320

**Course Name:** Remote Sensing & GIS

**Program & Sem:** B. Tech (PET) & VI Sem

**Date:** 30<sup>th</sup> June 2022

**Time:** 09.30 AM to 12.30 PM

**Max Marks:** 100

**Weightage:** 50%

**Instructions:**

*(vii) Read the all questions carefully and answer accordingly.*

*(viii) Scientific and Non-programmable calculators are permitted.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries FIVE marks.**

**(5Qx 5M= 25M)**

14. Fill the following

(C.O.No.4) [Knowledge]

xi. GIS stands for \_\_\_\_\_

xii. A \_\_\_\_\_ is a computerized system that helps in maintaining and displaying data about geographic space

xiii. Object of study has different characteristics for different locations is termed as \_\_\_\_\_

xiv. Object of study has different characteristics in different time is termed as \_\_\_\_\_

xv. \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ are the three stages of working with geographic data

15. Find the TRUE or FALSE statements

(C.O.No.1) [Knowledge]

i. Transverse Mercator projection is used for navigation purpose

ii. Map projection is a basic principle of map making in that when projected on to a flat map, objects on the earth's surface are distorted in some way, either in size, shape or in relative location

iii. Spatial objects in the real world can be thought of as occurring in four easily identifiable types namely, points, lines, areas and surfaces

iv. Mercator Projection is used to show regions along a great circle other than the equator or a meridian.

v. To transfer the image of the earth and its irregularities on to the plane surface of a map, three factors are involved, namely, a geoid, an ellipsoid or a datum with ellipsoid, and a projection.

16. Define the following

(C.O.No.2) [Knowledge]

i. Remote sensing

ii. Atmospheric Window

iii. Rayleigh Scattering

iv. SAR

v. Microwave remote sensing

17. Describe the reason (C.O.No.2) [Knowledge]
- 'Scattering is a function of roughness'
  - 'SAR capitalizes on the motion of the space craft to emulate a large antenna'
18. Expand the abbreviations (C.O.No.2) [Knowledge]
- SAR
  - SLAR
  - RADAR
  - IFOV
  - FCC

### Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries SEVEN marks.

(5Qx7M=35M)

19. SAR Remote Sensing and GIS capitalizes on the motion of the space craft to emulate a large antenna. Substantiate it with the help of illustration. (C.O.No.2) [Comprehension]
20. It is difficult to view stereo photographs stereoscopically without the aid of optical devices. The difficulties can be overcome by an instrument called stereoscope. Identify and Explain various types of stereoscopes used. Also, explain the advantages of one over other. (C.O.No.3) [Comprehension]
21. Identify the type of process and various classifications, which is mentioned in the figure (1) provided below. (C.O.No.1) [Comprehension]

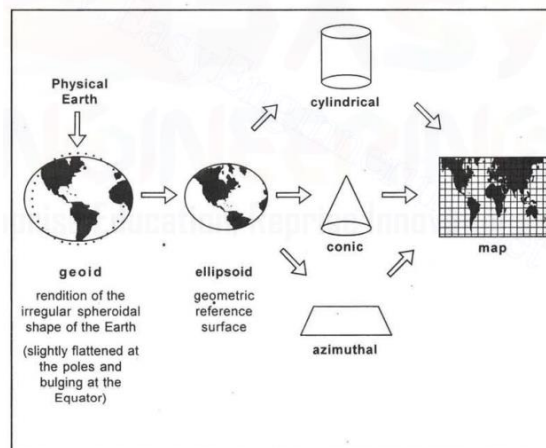


Figure: 1

22. There are five essential elements contained in the workflow. They are data acquisition, preprocessing, data management, manipulation and analysis, and product generation. For any application, it is important to view these elements as a continuing process. Identify type of workflow and give appropriate explanation (Figure: 2) (C.O.No.4) [Comprehension]

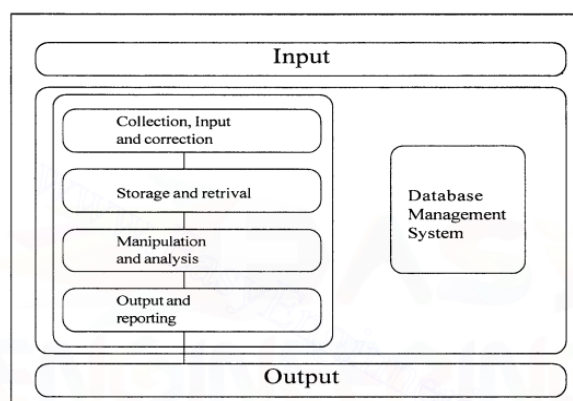


Figure: 2

23. Sensors are devices used for making observations. These consist of mechanisms, usually sophisticated lenses with filter coatings to focus the area observed on a plane in which the detectors are placed. These detectors are sensitive to a particular region in which the sensor is designed to operate and produce outputs which are representative of the observed area. Explain the statement given using the concepts of resolution.

(C.O.No.3) [Comprehension]

### Part C [Problem Solving Questions]

Answer all the Questions. Each question carries TEN marks.

(4Qx10M=40M)

24. "A systematic study of aerial photographs and satellite imageries usually involves several characteristics of features shown on an image".

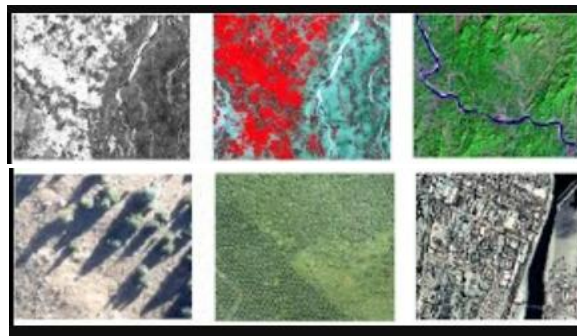


Figure: 3

a) Identify the various strands which aids in visual diagnosis of aerial photos which is shown in the figure (3). Also, explain. (C.O.No. 3) [Application]

25. GIS are decision support computer-based systems for collecting, storing, presenting and analyzing geographical spatial information. These systems are spatially referenced databases giving users the potentiality to control queries over space, and usually through time. Spatial analysis is a technology which typically requires two types of information about spatial objects. Identify and explain. Also, prepare a note on the geometric relationship between spatial entities and corresponding attributes as they are very crucial for spatial analysis and integration in GIS. (C.O.No. 4) [Application]

26. Remotely sensed raw data, received from imaging sensor mounted on satellite platforms generally contain flaws and deficiencies. The correction of deficiencies and removal of flaws

present in the data through some methods are termed as pre-processing methods. Interpret the graph which is given below (Figure: 4). Also, dramatize the importance of the remaining pre-processing methods as well. (C.O.No. 3) [Application]

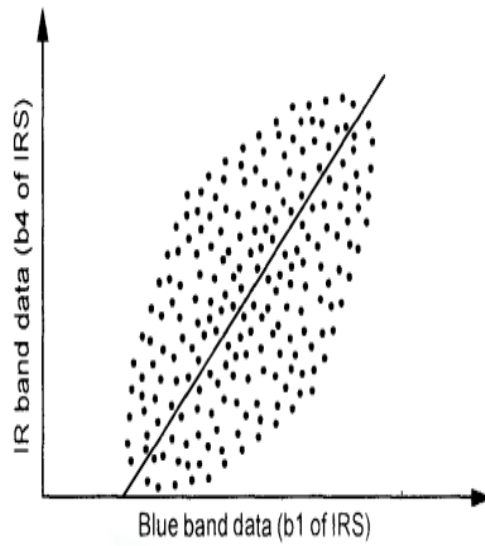


Figure: 4

27. Images derived from optical and digital remote sensing systems mounted in aircraft and satellites provide much spatial information and major data as an input to GIS. Demonstrate the linkage of remote sensing and GIS with proper explanations.

(C.O.No. 4) [Application]