

GSO.101 Spatial Thinking and Practice

Total Marks:

Time: 180 minutes needed and state it clearly when answering.

Note: Make suitable assumptions wherever needed during the exams.
No doubts will be clarified

6x4=24

Remote sensing is a form of Surveying. Briefly argue why you agree or disagree.
The need and use of third dimension in Geospatial data is increasing tremendously.
List and briefly state how you will order the elevation and object surface heights for such needs.

8. Which type of affordances do you think will affect each of the following two use cases, when a path for movement across a city neighbourhood with a large park is considered?

Travel by car

b. Movement using a bicycle

You need to make a map that preserves the directionality for a region/country that has the following characteristics.

Has almost 1500 kms in N-S direction
J. Has not more 400 kms in E-W direction

Which projection will you prefer to use? Briefly support your answer.

Explain with figures how two types of order of latitudes would affect the results of your suggestion.

1. There is a need to differentiate degraded lands (including salt affected from good vegetative or agricultural lands). How do you think this can be achieved for a large state in India?

What is CORS? And how does that help in GNSS based surveying?

Part II Answer any Five of the following questions

8. You wanted to compare the changes that have occurred spatially over a region and approached the authorities for the relevant Maps. They provided you with two paper maps - A map of 2020 where North is clearly marked upwards and a map of 2000 where the north is marked at some arbitrary direction as the map was made with the bottom side of the paper. VNS the Road from which there is access to this region. How will you ensure that the UOMans can be overlaid on each other? Detail the steps. (Hint: state your assumptions clearly)
9. Based on the discussions in the class on the need for spatial and temporal data in assessing and improving Agricultural outcomes, how do you relate this to the spatial thought? Which approaches are being focussed in the agricultural domain?

10. A region of almost 2km by 4kms is going to be developed as an IT city at the outskirts of an existing major city of India. It has a very undulating terrain. Both planimetric and levelling surveys have been carried out in this region. You need to represent the third dimension for use by (a) the planners/engineers and (b) the common (non-technical) user. Briefly describe your approaches for these two use cases.

H. What does one mean by 'Resolution' in remote sensing data? List and explain in a line what each of these mean.

End Semester Exam

27h Nov 2024

- How does a GNSS (GPS) work? Give two examples of operational GNSS systems and which country/region manages them.
- There is a plan to survey the IIT Hyderabad campus. Describe the Benchmarks and identify how you will set them up for a survey at a scale of 1:1000 (every meter needs to be surveyed.)

Part II. Answer the following question by detailing out your answers well

1x10=10

4. Discuss why projection systems are important in mapping? What are the different properties that a projection tries to preserve? Based on the choice of the (developable) surface (or geometry), cite two separate examples or now. One type of projection system would be preferable over another depending upon your projection goals.