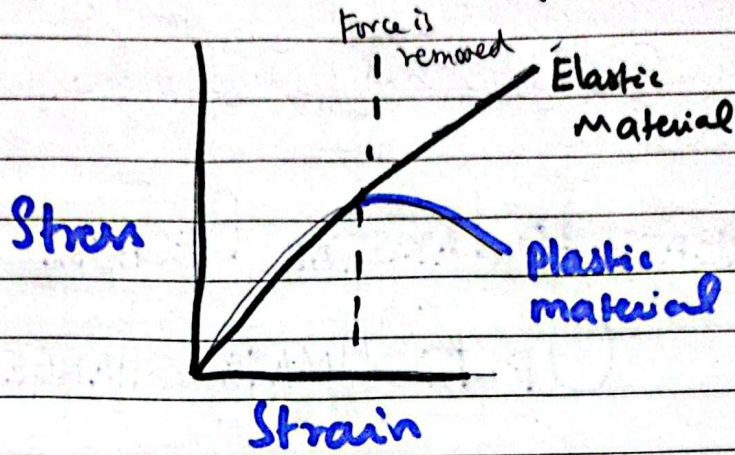


(a) What are the difference between Plastic and Elastic? Explain briefly?



~~Plastics~~ ~~Material~~ ~~Material~~
Application of Force

Upon the application of force, the materials both deform and the shape is changed. Furthermore, the plastic material has a deformation limit after which it can't return back to its shape. After that limit has passed the material fractures. Plastics materials are brittle in nature and easily fracture upon the application of force. Elastic materials are malleable and bend accordingly.

Hookes Law

Due to their nature, Plastic materials do not observe Hookes Law as seen in the graph above. Elastic materials on the other ^{hand} do observe Hookes Law.

Applications

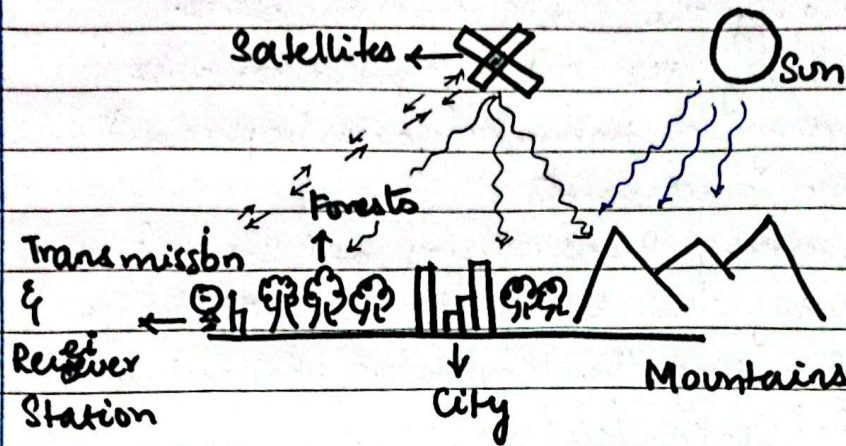
The applications of plastic material are found where strain on the material is limited.

Metallic objects are plastic and copper wires are an application of plastic material whereas the elastic materials are bendable and conform to the strain pattern. Rubber is a plastic material and its usage in tyres are application of elastic materials.

Question 3(b)

DATE: ___/___/___

What is the role of Remote Sensing and GIS in environmental science? Discuss briefly.



Remote Sensing & GIS Usage in Env Science

Remote Sensing is a process that is used to collect data from high altitude satellites of the environment and surrounding. Remote Sensing uses the satellites to capture data that data is not limited to visuals, scientific measurements, general location and so on.

During light hours, the sun illuminates the target area for the satellites. The satellites capture the data and relay that data back to the Transceiver (Transmission + Receiver) Station. The receiver station then relays that data to the scientists working on that data/problem.

Remote Sensing has a variety of uses in the field of environmental sciences. Some are listed below

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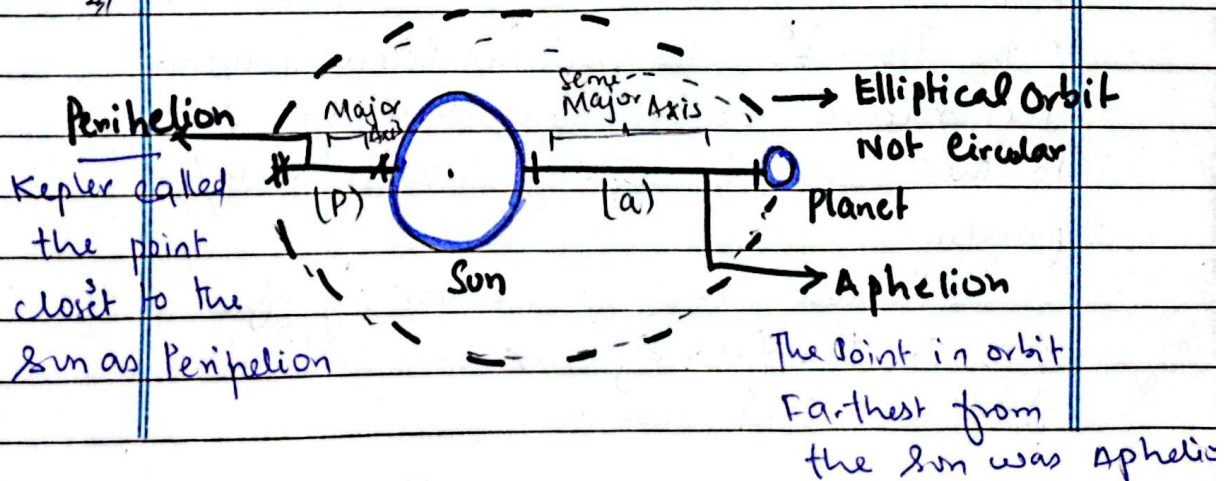
- 1) Monitoring Forest cover and Deforestation levels
- 2) Measuring the sizes of glaciers and estimating their reduction
- 3) Measuring the smog levels of cities.
- 4) Estimating the Urban sprawl of cities
- 5) Predicting environmental catastrophes and damage assessments
- 6) Documenting Bio-diversity and Habitat Loss.
- 7) Measuring the effects of Climate change
- 8) and Recording the Temperature, Rainfall and weather pattern/cycles

Question 3(c)

What are Kepler Laws related to the motion of planets?

Kepler's Laws were developed during the European Renaissance. During this time, it was established that the Sun was at the center of the Universe. Kepler later established the following 3 laws:

- 1) The planets follow an elliptical path with the Sun acting as one of its 2 foci



DATE: ___/___/___

- 2) Orbital Speed of a planet will vary according to the distance from the sun

$$v \propto \frac{1}{d}$$

Such that closer to the sun, the faster it is and the further away it is, the slower it is.

- 3) The square of any planet's orbital period (P) will be proportional to the cube of semi-major axis (a)

$$P^2 \propto (a)^3$$

Question 3(d)

What is the difference between preservatives and antioxidants? Discuss briefly with examples.

Preservatives - A Brief Introduction

— x —

Preservatives as the name suggest is used to protect food against microbial contamination. The preservatives prevent food from deteriorating from the growth of unwanted micro-organisms. They help delay the deterioration of foods but do not stop it completely. Preservatives only increase the lifespan of foods, they can't extend them indefinitely.

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Some examples are given below

Salt

It is the oldest recorded preservative that dates back to the Egyptians, Romans and so on. It is used to suppress growth of microbes on vegetable, meat and so on.

Sorbic Acid and Propionic Acid

Used as preservatives in many foods to suppress microbial growth.

Anti-Oxidants - A brief introduction

They are also food additives whose main goal is to counter ~~pre~~ food going rancid due to oxidation. They prevent chemical changes in the food to extend their lifespan. These are incorporated into products that contain fats. They are derived from a wide range of Natural and Synthetic origins.

Vitamin C and various salts →

They are used to protect soft drinks, jams, sweets, dairy products

Tocopherol

Used to preserve vegetable oils, butter & cocoa products.