'GSA'
Past Paper Questions.

Q.1(a) How does the Navstar GPS system work for different applications? (5)

Ans: The Navstar GPS system is a satellite-based radio navigation system that provides geo-location and time information to a GPS reciever anywhere on Earth. It consists of a constellation of 24-satellites orbiting Earth.

Applications:

(i) **Navigation:** The primary purpose of GPS is navigation. Applications include driving directions, maritime navigation and aviation.

(ii) Surveying and Mapping: Surveyors use GPS to create detailed maps, measure land boundaries and conduct geodetic surveys.

(iii) Precision Agriculture: Farmers use GPS-guided tractors and equipment for precise planting, fertilizing and harvesting

(iv) Scientific Research: GPS aids in studying Earth's crustal movements, tectonic plate shifts and climate change

(v) Aviation: Pilots use GPS for navigation, approach procedures and landing.

3.5

Add more points ....

(b) What do you know about remote-sensing techniques? Explain resolution and write down the names of its various types? (5)

Ans: **Remote Sensing:** is the science (and to some extent, art) of acquiring information about the Earth's surface without actually being in contact with it. Basic components of a remote-sensing system include: a target, an energy source, a transmission path and a sensor.

Types of remote-sensing are:
(i) Passive remote-sensing
(ii) Active remote-sensing

Resolution:

In image analysis meaningful information is extracted from the imagery. Much interpretation and identification of targets in remote-sensing (RS) is performed manually or visually, i.e. by human interpreter. Recognizing targets is the key to interpretation and information extraction. The most common softwares used in RS are ERDAS Imagine, ESRI, Map-Info and ERMapper.

Types of image resolution are:

Types
(1) (2) (3) (4)

spatial   Radio-metric   spectral   Temporal
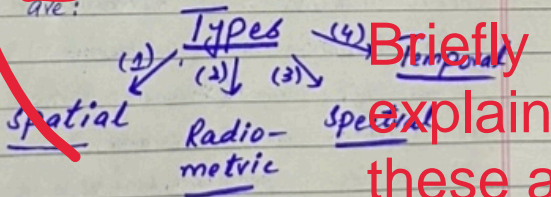
Briefly explain these as well

(c) Differentiate between natural and artificial satellites. Briefly describe the working of communication satellites with some applications (5)

Ans: Satellite:

A satellite is any object that revolves around a planet in a circular or elliptical path.

Natural Satellites:

are celestial bodies that orbit planets or other larger astronomical objects. Natural satellites vary greatly in size, composition, and orbital characteristics. They are commonly referred to as moons.

Artificial Satellites:

An Artificial satellite is a semi independent computer controlled system placed by humans in an orbit for different purposes. Examples include communication satellites, weather satellites and scientific research satellites.

How do communications Satellites work?

Communications satellites recieve information from transmitters on Earth (in an uplink) and beam it down to recievers elsewhere on the planet (in a down link). Transmitters and recievers differ widely

Applications of communication satellites.

Typical communications satellites include TELSTAR and INTELSAT. Communication satellites allow radio, television and telephone transmissions to be sent live anywhere in the world