1.Explain: Features of Jantar Mantar and how it is related to Astronomy?

Jantar Mantar in Jaipur is one of the 12 astronomical sites made by Raja Jai Singh II. It's a UNESCO heritage site.

It has multitudes of astronomical instruments made entirely out of stone , wood , marble , etc., with no electronic components. It is a testament of innovation at those times and proves that in this context , the word “advanced” doesn't exactly mean modern but the ability to execute ideas despite the supposed lack of technology at those times.

Various stone structures can be seen throughout the site making it look like sort of a sculpture park . There are sundials , horoscopy instruments , and much more.

Another interesting point is that there are multiple iterations of the same instrument. For example the Vrihat Samrat Yantra is an improved version of the Laghu Samrat Yantra , both of them are sundials however the builders didn't just stop after one but continued to improve their iterations , which hence led to samrat yantra being the largest sundial in the world.

The Ram Yantra and the Jai Prakash yantra are an interesting set of masterpieces which employ overlapping wedges made with stone and wood to measure the accuracy of other instruments.

Jantar Mantar shows how people studied stars long ago without computers. Its clever tools proved they knew a lot about how the sky works. It was key for tracking planets, telling time, and making predictions, adding a lot to historic astronomy. Improving tools like the Samrat Yantra meant they always tried to be more exact. In the end, Jantar Mantar highlights humanity's endless quest to understand space .

2.Explain: The motion of the Sun and Moon.

The Sun and Moon glide across the sky appearing to revolve around the Earth . However , it is the Earth that is moving . Earth spins from west to east , making the sun rise from the east. Meanwhile , the Moon orbits around Earth every 27 days , itself being affected by sunlight causing the plethora of moon phases. This dance of light and shadows helps us track time , tides , seasons , and the very rhythm of cosmic motion.

This natural synchronisation leads to phenomena like eclipses , nature’s version of precision science experiments.It’s a reminder that even basic cosmic motions are about synchronization, data, and observation .The same principles that drive tech and innovation today. Understanding this motion helps us see how predictable systems can lead to predictable progress.It's a reminder that even basic cosmic motions are about synchronization, data, and observation. These are the same principles that drive technology and innovation today. Understanding this motion helps us see how predictable systems can lead to predictable progress.

Looking through the lens of research , this motion is significant in astrodynamics , satellite tracking and climate modelling. The data from solar and lunar cycles is used to monitor Earth’s stability , seasonal

pattern and much more.This opens scope for simulation modelling , orbital predication and AI-assisted celestial observation.

3.Do you think Indian Astronomy is important? If yes, then why?

Brilliant minds like Aryabhata and Bhaskara were linking math with the movement of the cosmos long before anyone even dreamed of telescopes. They figured out things like Earth's rotation and planetary orbits just by using pure logic and careful observation. What really gets me is how they blended science with spirituality astronomy wasn't just about looking at stars, but about understanding the universe's fundamental balance.

I actually had this moment of clarity during the Horizons something event by DJS Nova. The ex-Core Secretary there totally challenged the Big Bang theory, asking how something as mind-bogglingly complex as the universe could possibly emerge from just a tiny speck. He suggested that instead of an explosive beginning, maybe the universe first found its harmony and then rose again. That idea really resonated with the Indian way of thinking that creation is a cycle, not just a chaotic one-off event . It doesn't mean that we need to prove the western point of view wrong , it is a reminder that we too , had something for us which we fail to cherish as time progresses on.

From a research standpoint, Indian astronomy is pushing us to re-examine cosmology by bringing together data and philosophy. Modern researchers are now looking at how ancient cyclic universe models could actually complement today's astrophysical simulations. For students like us, it's a huge invitation to combine ancient wisdom with cutting-edge computation, question everything, and maybe even completely rethink how we imagine the universe began.