University of Petroleum and Energy Studies, Dehradun

School of Engineering

Assignment - II

Course:	Fundamentals of Astronomy
Faculty Name:	Dr. Nitesh Kumar
Date:	May 23, 2025
Submission Date:	Feb 17, 2025

Instructions

- Answer all questions with proper explanations and diagrams where necessary.
- Each question carries equal marks.
- Submit the completed assignment by submission Date.
- Late submission would lead to -20% of the marks per week.

Questions

1. Discuss the key contributions of **Mesopotamian, Babylonian, and Egyptian** civilizations to early astronomy. How did their astronomical advancements influence later cultures?
2. Describe the role of **Eratosthenes** in determining the size of the Earth. Explain his method and discuss its historical significance.
3. Explain how **Hipparchus** discovered the precession of the equinoxes. Why was this discovery important for the development of astronomy?
4. Aryabhata proposed the **rotation of the Earth** and a scientific explanation of **eclipses**. Explain these concepts in detail and compare them with prevailing astronomical views of that time.

5. Summarize the contributions of **Varāhamihira** to astronomy and mathematics. How did his works help in preserving and advancing astronomical knowledge?

6. Compare and contrast the **Geocentric model** of Ptolemy with the **Heliocentric model** of Copernicus. How did the heliocentric theory gain acceptance?

7. Explain **Kepler's three laws of planetary motion**. How did these laws refine the heliocentric model?

8. Discuss Galileo's **telescope observations** and how they supported the heliocentric model. What were the implications of his discoveries for the scientific community?

9. What is **Jantar Mantar**? Describe its major astronomical instruments and their significance in ancient Indian astronomy.

10. How did the works of ancient astronomers influence later scientific advancements? Provide examples of key ideas that have persisted into modern astronomy.