

### Questions on Saliba Chapter 3: Encounter with the Greek Scientific Tradition

1. At the beginning of the chapter it is stated that Persian and Sanskrit texts were the first to be translated but in a relatively short time (by the middle of the 9<sup>th</sup> century) almost all translation shifted to Greek texts. Why was that?
2. The importers of the Greek astronomy had to make sure that their field was disassociated from astrology. Why?
3. What is *ilm al-Hay'a* and how and why did it come to being? What are two other mathematical disciplines that are created out of religious requirements of Islam?
4. Why did the translators of scientific texts have to be extra careful to weed out mistakes?
5. Islamic scholars read Almagest in conjunction with another Greek text. What was it? Which one was written first?
6. What was the most basic cosmological tenet of the Greek astronomy?
7. According to Aristotle, all celestial bodies are made up of the same simple element. What is it?
8. Muslim scholars found several categories of problems with *Almagest*. What were they? What was the most fundamental problem in Almagest that bothered Muslim astronomers the most?
9. What kinds of mathematical updates did Muslim scientists introduce on Almagest?
10. Did Muslim scholars read Almagest as a single book by itself or in relation to other books?
11. What is the Astronomical Shukuk tradition? What familiar Muslim scholar we studied has an important role in this and what is it?

12. What Greek books are mentioned among the ones criticized by Ibn al-Haytham? What common problem did he find among all these books?
  
13. What was the most fundamental problem in Almagest that bothered Muslim astronomers the most?
  
14. As a result of the shukuk tradition, Muslim astronomers set a new standard in astronomy. What was it?
  
15. What did Muslim scientists notice about the role of mathematics in describing natural phenomena? This observation was best articulated by Shams al-Din al-Khafri (d. 1550)
  
16. Besides astronomy, Saliba gives a few of examples from medicine where Muslim scholars found problems in Greek sources that they could not resolve and proposed their own explanations. What are those examples?
  
17. What is the main point of this chapter?

**Some Definitions:** Also see the ppt in the Google drive with figures.

**Precession:** Gradual rotation of earth's axis that traces out a cone.

**Inclination of the Ecliptic:** The axis of rotation of the Earth is not perpendicular to the plane of its orbit around the Sun, but is tilted by an angle of  $23\frac{1}{2}^{\circ}$ . So, as the Earth revolves around the Sun, the north pole is tilted  $23\frac{1}{2}^{\circ}$  toward the Sun on June 21, and  $23\frac{1}{2}^{\circ}$  away from the Sun on December 21

**Epicycle and Deferent:** Epicycle is a circle in which a planet moves and which has a center that is itself carried around at the same time on the circumference of a larger circle, called deferent.

**Equant:** A planet or the center of an epicycle is assumed to move with a uniform speed with respect to the equant. This means, to a hypothetical observer placed at the equant point, the center of the epicycle would appear to move at a steady speed. However, the planet/center of epicycle will not move uniformly on its deferent.

**Apogee:** The point farthest from a planet or a satellite (as the moon) reached by an object orbiting it vs **perigee**