

Study Questions on Descartes and the Mechanical Philosophy (Westfall 25-42)

1. According to Westfall, how was Galileo's attitude towards experiments different from Gilbert's?
2. According to Gilbert, what are the differences between electricity and magnetism?
3. How does Gilbert explain the motion of the earth with respect to the sun?
4. According to Westfall, how was the "Renaissance Naturalism" of Gilbert more sympathetic with empirical methods of investigation than "Scholastic Aristotelianism"?
5. How did van Helmont use his tree experiment to argue that water was the matter from which all things are formed?
6. How is Cartesian dualism a reaction to Renaissance Naturalism?
7. What was Descartes' method of doubt? What claim did he think could be known with complete certainty?
8. Did Descartes think the physical world can be known with certainty through the senses?
9. What is Descartes' principle of inertia? Why was it essential to the mechanical philosophy?
10. How does Descartes' and Gassendi's concept of inertia differ from Galileo's?
11. Why can there be no vacuum, according to Descartes?
12. Why do centrifugal pressures exist in the universe, according to Descartes?
13. How does Descartes explain the motions of the planets with respect to the sun?
14. What is the mechanical basis of light, according to Descartes? What is the mechanical basis of magnetism?
15. How did the atomism of Gassendi differ from the corpuscularianism of Descartes?
16. How does Westfall characterize Gassendi's view of science? How is this view different from the view of Descartes and Aristotle?
17. According to Boyle, what are the two "catholic principles" of the mechanical philosophy?

Study Questions on Biology and the Mechanical Philosophy (Westfall 82-104)

1. According to Westfall, how did the 17th century revolution in the life sciences differ from the revolution in (what we know call) physics?
2. Why was constructing a system of taxonomy in zoology more difficult than in botany?
3. What event in 1624 contributed more to biological research than any other in the 17th century, according to Westfall?
4. According to Galen, what was the primary organ of the body? What function did the heart provide?
5. According to Galen, what distinguished the venous system from the arterial system?
6. According to Westfall, what was Harvey's essential insight?
7. What is the primary motion of the heart according to Harvey? According to Galen?
8. What was Harvey's *quantitative* argument in support of his claim that the blood circulates through the body?
9. How did Harvey attempt to demonstrate that blood passes from the arteries to the veins?
10. According to Westfall, did Harvey see the heart *solely* as a mechanical pump?
11. In what sense is the blood spiritual, according to Harvey?
12. How did Descartes' description of the circulation of the blood differ from Harvey's?
13. According to Westfall, in what sense did Descartes' description represent a "reactionary step backward" in comparison to Harvey's?
14. What was iatromechanics?
15. How did Harvey's account of embryonic development based on *epigenesis* differ from Gassendi's account based on *preformation*?
16. What was the theory of *emboîtement*?
17. What was *ovism*? What was the observation made by Leeuwenhoek that discredited it?
18. How was *animaculism* compatible with preformation?
19. According to Westfall, in what sense did the mechanical philosophy obstruct comprehension of the new discoveries in embryology? Was the mechanical philosophy solely to blame for such obstruction?
20. According to Westfall, should the iatromechanists be compared with contemporary biophysicists and biochemists? Why?