The Industrial Revolution: Theoretical Practices and Practical Theories

A. What Was the Industrial Revolution?

1. narrow sense
2. broad sense

B. Two Chronological Phases

1. Old, or First, Industrial Revolution (1750–1850)
2. New, or Second, Industrial Revolution (1850–1970)

C. Roots of Industrial Revolution

1. Medieval Technology (water power, cam)
2. Renaissance Spirit (innovation)
3. Commercial Revolution (capitalization)
4. Domestic System (textile manufacturing methods)

D. Why England?

1. Markets — colonies (esp. India)
2. Population — enclosure acts; skilled textile workers
3. Natural Resources — Coal and Iron
4. Government — move from mercantilism to laissez-faire policies
5. Financial Institutions — banks

E. Agricultural Revolution

1. Primitive Agricultural Methods
2. Industrial Growth Spurs Agriculture
3. "Scientific" Agriculture (Charles Townshend; Robert Bakewell)
4. Effects

F. Cholera and Sewage Disposal: London as a Case Study

1. Cholera outbreak and riots of 1831 — "anarchical, Socialist and infidel forces"
2. William Farr, statistician; Sir John Snow, doctor; John Simon, medical officer
3. Parliament passes emergency acts renewing and developing sewer system (1858)

G. Political Economy

1. "Pig Philosophy"; the "dismal science"
2. Economic Theorists

From Economic Theory to Practical Reforms

Economic Theorist	*Major Work*	*Key Concept*
Adam Smith (1732–1790)	An Inquiry into the Nature and Causes of the Wealth of Nations (1776)	"invisible hand"
Jeremy Bentham (1748–1832)	Principles of Morals and Legislation (1789)	"the greatest good for the greatest number"
Thomas Malthus (1766–1834)	Essays on the Principle of Population (1798)	"Population, when unchecked, increases in a geometrical ratio. Subsistence only increases in an arithmetical ratio."
David Ricardo (1772–1832)	The Principles of Political Economy and Taxation (1817)	"iron law of wages" "labor theory of value"
James Mill (1773–1836)	Elements of Political Economy (1821)	capital tends to increase less rapidly than population, therefore, the chief object of reform is to prevent population from growing too rapidly
Nassau William Senior (1790–1864)	An Outline of the Science of Political Economy (1836)	abstinence theory "Last Hour"
Friedrich List (1789–1846)	Das nationale System der politischen Ökonomie (1840)	the duty of governments is to see to it that every individual makes the most of their talents in cooperating for the general good
John Stuart Mill (1806–1873)	On Liberty (1859)	"The only purpose for which power can be rightfully exercised over any member of a civilized community against his will is to prevent harm to others."

First Industrial Revolution—1750–1850

Inventors	*Inventions*	*Year*	*Significance*
<u>Textiles:</u>			
John Kay (English)	Flying Shuttle	1733	hand-operated, sped up weaving by loom and created demand for thread
James Hargreaves (English)	Spinning Jenny	1765(1770)	hand-operated, spun eight threads at one time
Richard Arkwright (English)	Water Frame	1769	used water power for spinning
Samuel Crompton (English)	Spinning Mule	1774–1779	combined best features of spinning jenny and water frame
Edward Cartwright (English)	Power Loom	1785	used water power for weaving
Eli Whitney (American)	Cotton Gin	1793	hand-operated at first, removed seeds from raw cotton
<u>Steam Power:</u>			
Thomas Newcomen (English)	crude Steam Engine	1705–1712	served chiefly to operate pumps draining water from coal mines
James Watt (English)	efficient Steam Engine	1769	adapted for textile mills by 1785
Robert Fulton (American)	Steamboat	1807	steamboats soon appeared on rivers and along coasts; in 1838 a steamboat crossed Atlantic Ocean in 15 days
George Stephenson (English)	Steam Locomotive	1814	railroads soon became leading means of transportation
<u>Agricultural Revolution:</u>			
Jethro Tull (English)	Seed Drill	1701	planted seeds in rows; improved on "broadcast," or hand, sowing
Charles Newbold (American)	Cast-Iron Plow	1797	turned soil deeper and more easily than wooden plow
Cyrus McCormick (American)	Reaper	1834	cut grain many times faster than a scythe
John Deere (American)	Self-Cleaning Steel Plow	1837	improved upon cast-iron plow