Section B

Early History
Early Humans

- Origins: 150,000 years ago
- Hunter gatherers

Transition to Agriculture

- 11,000 BCE: Early evidence of agriculture
- 6000 BCE: Most farm animals domesticated
- 5000 BCE: Agriculture practiced in every continent except Australia

Effects of Agriculture

- More labor intensive, in some cases
- 10 to 100 more calories per acre

Grave chamber of Panehsi, scene with farmers and ass. Circa 1298-1235 BCE. Available at Wikimedia Commons.
Population Growth

- 10 000 BCE: ~4 million
- 1000 BCE: ~50 million
- 1 CE: ~200 million

Growth of Civilizations

- Early cities: Uruk, 3000 BCE; population 50,000
- Arts
- Literature
- Technology
- Politics
- Social classes

Photo: Uruk temple façade. Available at: http://commons.wikimedia.org/wiki/File:Pergamonmuseum_-_Vorderasiatisches_Museum_007.JPG
Drivers of Famine

- Population growth
- Resource degradation
- Changing climate
- Drought
- Conflict

Photo by Litchfield District Council. CC BY-NC-ND.
Soil Fertility
The Plow

- “... the plow has been more destructive than the sword”

Funerary stele from the Louvre Museum features plowman, cattle. Circa 100-300 CE, Southern Arabia. Available at Wikimedia Commons.
Soil Erosion

- Dust Bowl, 1930s
- Midwestern United States

USDA. *Buried machinery in barn lot in Dallas, South Dakota, United States during the Dust Bowl.* (1936). Public domain.
Population Growth

- 10,000 BCE: ~4 million
- 1,000 BCE: ~50 million
- 1 CE: ~200 million

Europe

- Periodic famine

Thomas Malthus

- Assumptions, 1798
  - Exponential population growth
  - Linear increases in food production
- Warned of widespread famine

Population Growth

- **1650 CE**: 550 million
- **1850 CE**: 1.2 billion
- **1900 CE**: 1.65 billion

Synthetic Nitrogen Fertilizers

- 1900s

- Credited for fueling population growth from 1.6 to 6 billion

Ammonia, used in synthetic nitrogen fertilizers, is manufactured in plants like this one. 
Photo by Carlee Ross. CC BY-NC.
Review