Chapter 1: Introduction: The Evolution of Health Informatics

MULTIPLE CHOICE

1. The historical roots of computer science can be traced to:

a. language development, especially English.

b. mathematics and engineering.

c. library science.

d. medicine and nursing.

CORRECT ANSWER: B

The historical roots of computer science can be traced back to mathematics and engineering. The historical roots of information science began in library science. Language development and medicine and nursing are not the roots of computer science.

DIF: Cognitive Level: Understand REF: p. 3

2. The historical roots of information science can be traced to:

a. language development, especially English.

b. mathematics and engineering.

c. library science.

d. medicine and nursing.

CORRECT ANSWER: C

The historical roots of information science began in library science. The historical roots of computer science can be traced back to mathematics and engineering. Language development and medicine and nursing are not the roots of information science.

DIF: Cognitive Level: Understand REF: pp. 3-4

3. The first book to include the term nursing informatics in the title was written in the:

a. 1960s.

b. 1970s.

c. 1980s.

d. 1990s.

CORRECT ANSWER: C

The first book to include the term nursing informatics in the title was published in 1988.

DIF: Cognitive Level: Remember REF: p. 6

4. As knowledge develops and expands within a discipline, which information source will include the oldest but best organized representation of that knowledge?

a. Conference presentations

b. Conference proceedings

c. Journal articles

d. Books

CORRECT ANSWER: D

The information source that includes the oldest but best organized representation of knowledge is books.

DIF: Cognitive Level: Apply REF: p. 5

5. Which technical development created a tension between centralized and decentralized computer management in healthcare?

a. The development of punch cards

b. The elimination of punch cards

c. The development of the mainframe computer

d. The development of the personal computer

CORRECT ANSWER: D

The development of the personal computer created tension between centralized and decentralized computer management in healthcare. The other responses highlight aspects of decentralized computer management.

DIF: Cognitive Level: Apply REF: p. 3

6. Which of the following is not a member organization but rather a group of organizations?

a. AMIA

b. HIMSS

c. AHIMA

d. ANI

CORRECT ANSWER: D

The Alliance for Nursing Informatics (ANI) is an organization of organizations. This is not a member group. AMIA, HIMSS, and AHIMA are all member groups.

DIF: Cognitive Level: Remember REF: p. 7

7. Which statement concerning educational programs in health informatics is correct?

a. All health informatics programs are offered at the graduate level.

b. Informatics programs offered by medical schools always require students to have earned an MD for admission.

c. All health informatics programs are located within health-related departments or schools such as nursing, medicine, or pharmacy.

d. Health informatics programs range from certificate programs offered at the community college level to post-doctoral programs offered at major research institutions.

CORRECT ANSWER: D

The correct response is health informatics programs range from certificate programs offered at the community college level to post-doctoral programs offered at major research institutions. Not all informatics programs require an MD, are at the graduate level, or are located within schools of health sciences.

DIF: Cognitive Level: Apply REF: pp. 9-10

8. Which statement related to certification in health informatics is correct?

a. A master's in nursing is required to sit for the NI examination offered by ANCC.

b. To be certified in clinical informatics in association with AMIA, one must first be a physician.

c. There are no specific educational requirements for CPHIMS certification through HIMSS, but three years of full-time clinical experience in health IT is required.

d. To be certified as CPHIMS, you must be a nurse.

CORRECT ANSWER: B

To be certified in clinical informatics in association with AMIA, one must first be a physician. You do not need to have an MSN to sit for the NI exam by the ANCC. There are specific requirements for CPHIMS, but being a nurse is not one of them.

DIF: Cognitive Level: Apply REF: p. 11

MULTIPLE RESPONSE

9. The term informatics is derived from: (Select all that apply.)

a. Dutch.

b. English.

c. Russian.

d. Arabic.

e. French.

CORRECT ANSWER: B, C, E

The term informatics was derived from the following languages: English, Russian, and French.

DIF: Cognitive Level: Understand REF: p. 4

10. When the AMIA model is used, which subfields are categorized as clinical informatics? (Select all that apply.)

a. Medical informatics

b. Nursing informatics

c. Dental informatics

d. Chemical informatics

e. Business informatics

CORRECT ANSWER: A, B, C

When the AMIA model is used, the following disciplines are categorized as clinical informatics: medical informatics, nursing informatics, and dental informatics. The other responses are not clinically related.

DIF: Cognitive Level: Analyze REF: p. 14

Chapter 2: Theoretical Foundations of Health Informatics

MULTIPLE CHOICE

1. What is the primary difference between an open and closed system?

a. An open system has no boundary, and therefore there are no limits to the inputs and outputs between an open system and the environment.

b. An open system has a semipermeable boundary and therefore will filter both inputs and outputs when interacting with the environment.

c. A closed system has a semipermeable boundary and therefore will filter both inputs and outputs when interacting with the environment.

d. A closed system does not have a boundary and therefore will not interact with the environment.

CORRECT ANSWER: B

With an open system the boundary is semipermeable, thereby controlling what will be accepted as input and what will be permitted to leave the system.

DIF: Cognitive Level: Understand REF: p. 20

2. The primary characteristics used to analyze an open system include:

a. structure, purpose, and functions.

b. sub-system, target system, and super-system.

c. boundary, attributes, and environment.

d. hierarchical, web, and hybrid.

CORRECT ANSWER: A

Using these three characteristics, one can determine why the system exists, what functions it performs to achieve its purpose, and how it is structured to achieve its purpose.

DIF: Cognitive Level: Analyze REF: p. 20

3. A change made to any aspect of an open system, whether it is a health care system or a computer system, will produce change in other aspects of that same system. As a result, any change can produce unintended consequences. This process is called:

a. dynamic homeostasis.

b. semi-planned change.

c. negentropy.

d. reverberation.

CORRECT ANSWER: D

Change within any part of the system will be reflected across the total system through a process termed reverberation. Reverberation is reflected in the intended and unintended consequences of system change.

DIF: Cognitive Level: Remember REF: p. 23

4. Chaotic systems are in a constant state of change. This degree or scope of change that can occur has been described as the butterfly effect. The butterfly effect refers to:

a. a minor change in input can create a major change in output, or a major change in input can result in minor changes in output.

b. a major change in input will create a major change in output, and a minor change in input will create minor changes in output.

c. a minor change in input can create a minor change in output; however, a major change in input will result in minor changes in output.

d. a minor change in input may create a major change in output; however, a major change in input will create a major change in output.

CORRECT ANSWER: A

Chaotic systems are dynamic systems with reiterative feedback loops. A minor change in input can create a major change in output. This is often described as the butterfly effect. A butterfly's flapping wings in California can over time become a hurricane in New York.

DIF: Cognitive Level: Analyze REF: p. 24

5. Which statement describes the measurement of information as defined by the Shannon and Weaver model?

a. The amount of information is measured by the amount of data in the message.

b. The amount of information is measured by the number of meanings that can be assigned to a message.

c. The amount of information is measured by the extent the message decreases entropy.

d. The amount of information is measured by the number of characters used to create the message.

CORRECT ANSWER: C

By decreasing entropy one decreases uncertainty. If a coin is thrown into the air, it may land on either of two possible sides, heads up or tails up. Once it lands, the other side of the coin can be determined. The options are coded zero (0) and one (1) and are the basis for building computer code.

DIF: Cognitive Level: Remember REF: pp. 25-26

6. The number 190 is an example of:

a. data.

b. information.

c. knowledge.

d. wisdom.

CORRECT ANSWER: A

The number 190 could refer to anything such as a person's weight, blood glucose level, or systolic blood pressure reading and therefore has no meaning by itself.

DIF: Cognitive Level: Apply REF: p. 26

7. Knowing when and how to use knowledge is referred to as:

a. procedural knowledge.

b. cognitive knowledge.

c. decision support system.

d. wisdom.

CORRECT ANSWER: D