

EXAMPLE

QUIZ 1 (Modules 1 – 4) 20 Multiple Choice Questions (20 Marks)

Choose the **BEST** answer to each question. Carefully consider the meaning of each statement.

1. Environmental stewardship is:
 - a. Harnessing the power of nature for the betterment of human kind.
 - b. An attitude of care toward the natural world.
 - c. Ensuring that all engineering activities contribute to healthy ecosystem function.
 - d. The same as sustainable development.
2. Global population in 2050 (i.e. by about the end of your working career) is estimated to be:
 - a. Approximately 3 billion.
 - b. Between 8 and 10 billion.
 - c. Between 10 and 12 billion.
 - d. Approximately 15 billion.
3. According to NASA, what is a key indicator of global climate change?
 - a. Atmospheric CO₂ concentration
 - b. Average global temperature
 - c. Area of Arctic Sea Ice
 - d. All of the above
4. Canada has met its targets for reduction in CO₂ emissions relative to 1990 levels.
 - a. True
 - b. False
5. Professor Peter Newman describes the three sectoral dimensions of sustainability. They are:
 - a. The Market, The Community, The Government.
 - b. The resource sector, the financial sector, the not-for-profit sector.
 - c. The economy, the society, the environment.
 - d. The human community, the animal community, the plant community.
6. What is the difference between an expert learner and a novice learner:
 - a. Experts have higher intelligence scores than novice learners
 - b. Unlike experts, novice learners tend to believe that failure is due to deficiencies that cannot be remedied (eg “I’m just not smart enough”).
 - c. Expert learners are unmotivated.
 - d. None of the above.

7. An example of argumentation “evidence” is:
 - a. Statistical analysis of a data set.
 - b. A photographic image.
 - c. A personal experience.
 - d. All of the above are examples of “evidence” that can be part of an argument
8. What is a unique characteristic of a profession?
 - a. A profession is self-regulating.
 - b. A professional has an obligation to set fees in accordance with the standard published by government.
 - c. A profession is charged with a substantial degree of public obligation and performs its services largely in the general public interest.
 - d. A profession must organize into an association that monitors all legal interactions between the profession and its clients.
9. In recommending actions, the professional engineer should not limit his/her considerations to only technical issues.
 - a. True
 - b. False
10. The “Big-Five” personality traits are openness, conscientiousness, narcissism, “Machiavellianism, and psychopathy.”
 - a. True
 - b. False
11. Which of the following can be described as a system?
 - a. 10 rocks
 - b. Your brain
 - c. A community of coral polyps (i.e. a coral reef)
 - d. Both b and c.
12. An example of systems thinking is:
 - a. Counting the number of components in a system.
 - b. Asking questions and not taking anything at face value.
 - c. Estimating systemic errors.
 - d. Observing relationships between things.
13. Concept Maps are structured:
 - a. With spokes of “secondary concepts” radiating from a “central” or “primary concept”.
 - b. Such that they are round
 - c. Concept maps have no structure
 - d. As a hierarchy.

14. The two key characteristics shared by both biological and industrial organisms are:
 - a. resource utilization and life-cycles.
 - b. ability to reproduce and mutual interactions.
 - c. Use of oxygen and life-cycles.
 - d. Ability to re-produce and use of oxygen.
15. Specific examples of events or objects are essential components of the highest quality concept maps.
 - a. True.
 - b. False.
16. The term “urban metabolism” describes:
 - a. organic aspects of an urban environment
 - b. the natural aspects of the urban environment
 - c. cities as complex, thermodynamically open, self-organizing organisms
 - d. cities that are sustainable.
17. The primary infrastructure system driving growth and change of cities is the:
 - a. social system
 - b. water system
 - c. transportation system
 - d. both a and b
18. A critical system influencing the quality of the megacity is:
 - a. The political system.
 - b. The education system.
 - c. The cultural system.
 - d. The public health system.
19. The Integrated Design Process for buildings is initiated at the following stage in the design/build process:
 - a. pre-design (i.e. programming) discussions
 - b. conceptual design stage (a.k.a. conceptual design)
 - c. detailed design stage (a.k.a. detailed design)
 - d. construction stage
20. A design charette is:
 - a. a process that monitors progress in the Integrated Design Process.
 - b. a room in which walls display 3-D images of design options so that designers can “walk-through” their ideas.
 - c. the package of all design drawings that is passed from the architect to the engineers
 - d. none of the above

Part 2 Short Answer Questions (15 Marks)

21. Concept Maps (10 marks)

Use the following focus question to construct a preliminary list of ranked concepts, including at least 5 examples:

“ Given the notion of “regenerative sustainability” (including the drivers and imperatives of sustainability), what are the “regenerative infrastructure” components in megacities?”

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22. In Lesson one of Module 4, you learned that urban planners characterize cities by a very simple analysis that identifies the general material entering and leaving a city on a mass/year basis. You were presented with the example of Sydney Australia.

Assuming that Vancouver is very similar to Sydney, What are the four material flows entering Vancouver and what are the four material and energy flows leaving Vancouver, on an annual basis? Which of the material inflows is the largest? Which of the material outflows is the largest? (5 marks)

PART 3: ARGUMENTATION QUESTION (5 marks)

In clear and concise, grammatically correct, sentences, answer the following question.

23. Analyze the argumentation components of the following article:

Homer-Dixon (2009) "The Newest Science: Replacing physics, ecology will be the master science of the 21st century"

23.1 Describe a primary claim made by Homer-Dixon

23.2 What are the reasons given by Homer-Dixon that support this claim?

23.3 Please state the evidence Homer-Dixon provides in support of each reason you identified in question 23.2 above.