1.Question 1

Consider the following problem from a university course:

“A gallon of gasoline has the potential energy of approximately 276.3 MJ. Assume that a gasoline engine is driving a generator and the generator is supplying electricity to a 50 W lamp. The overall efficiency (from gasoline to electrical energy) of the engine-generator set is 15%.

How long will the lamp provide light from one gallon of gasoline?

(Adapted from: Eide, Jenison, Northup, & Mickelson, 2011, p. 392)

What is the goal of this problem?

(b). To find the length of time the lamp will provide light from one gallon of gasoline

2.Question 2

Consider the following problem from a university course:

“In 2006, Mt Red High School, a public school in Sydney’s inner-west, ranked 1st in NSW for HSC Physics and Biology. Since 2013, however, there has been a sharp decline the Physics scores and this year only 3 students signed up for the course. A study was done that indicates students are losing interest in Science during year 9. Design a curriculum outline with the aim of increasing interest in Science. Your curriculum outline should include the sequence of units, descriptions of each unit, and all assessments for the course.”

Is this an example of:

(a). An ill-defined problem



3.Question 3

Consider the following problem from a Landscape Architecture course:

“A local government has put out a tender for a park design in the middle of a newly-residential area. They have plotted out an area of 2 hectares in a rough polygon shape. The area is relatively flat, but is surrounded by ten-story apartment buildings on three sides, a busy road to the north and a small side-street on the last side towards the east. The local population is a mix of young families, local university students and young professionals and is very multicultural.

The brief for the park indicates that it should “embody the community spirit” and “encourage a fit and healthy lifestyle”. Develop a proposal that answers the brief and is both sustainable and ecological.”

What is the goal this problem?



(a). A proposal that embodies the community spirit and encourages a fit and healthy lifestyle



(b). A proposal that is sustainable and ecological



(c). A proposal that fits into the 2 hectare polygon

4.Question 4

Consider the following problem:

Two cars are stopped at either end of a 100km highway. At the same time, they both start driving towards each other. Car A travels at 20km/hr and car B travels at 30km/hr. At the same time as the cars start, a dog jumps out of Car A and runs towards car B at 50km/hr. When the dog reaches car B, he immediately turns around and runs back to car A. He repeats this until the cars collide.

If the dog stops running as soon as the cars meet, how far has he run?

Use the equation: speed = distance/time.

(b). A well-defined problem

5.Question 5

Consider the following problem from a university course:

“List the causes and the signs and symptoms of *labyrinthitis* (an inner ear infection).”

In answering this descriptive task, which of the following would you be expected to do:

(c). List the signs and symptoms of labyrinthitis. For example, vertigo is a symptom.



(d). List the causes of labyrinthitis. For example, suggest that the common cold or flu is often thought to be a cause, but the exact cause is unknown.



(e). Both (c). and (d).

8.Question 8

Consider the following problem from a university course:

“In 2006, Mt Red High School, a public school in Sydney’s inner-west, ranked 1st in NSW for HSC Physics and Biology. Since 2013, however, there has been a sharp decline in Physics scores and this year only 3 students signed up for the course. A study was done that indicates students are losing interest in Science during year 9. Design a curriculum outline with the aim of increasing interest in Science. Your curriculum outline should include the sequence of units, descriptions of each unit, and all assessments for the course.”

In solving this problem, how many different solutions would you give?

(c). 3 – 4 different solutions: You need to try a few to see what works best, and then present a few different options in your answer.