ISE 311 Engineering Economic Analysis HW-1

1. Some of the following problems would be suitable for solution by engineering economic analysis. Which ones are they?

1. Would it be better to buy a car with a diesel or gasoline engine?
2. Should an automatic machine be purchased to replace three workers now doing a task by hand?
3. Would it be wise to enroll for an early morning class to avoid traveling during the morning traffic rush hours?
4. Would you be better off if you changed your major?
5. One of the people you might marry has a job that pays very little money, while another has a professional job with an excellent salary. Which one should you marry?

2. Many people write books explaining how to make money in the stock market. Apparently the authors plan to make their money selling books telling other people how to profit from the stock market. Why don’t these authors forget about the books and make their money in the stock market?

3. A car manufacturer is considering locating an assembly plant in your region. List a simple, a intermediate and a complex problem associated with this proposal.

4. If there are only two alternatives available and both are unpleasant and undesirable and there is no do nothing option, what should you do?

5. In the 1970’s the Ford Motor Company sold its subcompact Pinto model with known design defects. In particular, the gas tank’s design and location led to rupture, leaks and explosion in low-speed, rear-impact collisions. Fifty-nine people burned to death in Pinto accidents. In a cost-benefit analysis weighing the cost of fixing the defects ($11 per vehicle) versus the firm’s potential liability for lawsuits on behalf of accident victims. Ford had placed the value of a human life at $200,000. Ford eventually recalled 1.4 million Pintos to fix the gas tank problem for a cost around $35 million. In addition the automaker ultimately paid out millions more in liability settlements and incurred substantial damage to its reputation.

a. Critique Ford’s actions from the perspective of the NSPE code of Ethics.

b. What should engineers do when the product they are designing has a known safety defect with an inexpensive remedy?