MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Sloan School of Management

15.566 Information Technology as an Integrating Force in Manufacturing
Take Home Final

Note: This open-book take home assignment will be graded on a 125-point scale. Please, work on this assignment individually. This assignment is due <u>before</u> next class. Exceptions will only be made on an individual basis. If you feel you need one please send me an email by immediately so we can have a meeting to talk about it. Preparing for this assignment and answering the questions in it should take you less than 6 hours (the assigned time for two weeks of course work).

1. (10 points) Questions related to cookies:

   a) Where are cookies located?
   b) What are the kinds of information that can be saved in a cookie? Give at least four examples of data fields that can be saved in a cookie.
   c) Explain how these cookie data fields can be used to integrate databases across enterprises for marketing purposes. Limit your answer to 4 sentences.
   d) How could they be used to integrate databases across manufacturing sites?

2. (5 points) How does packet switching work and how is it different from circuit switching?

3. (5 points) What are the differences and similarities between business processes and computer programs as conceptual constructs?

4. (5 points) An LMC has in Input Port 1 the number 33 and in Input Port 2 the number 11. After executing the following instructions:

GET 1
SWAP
GET 2
ADD
ADD
PUT 1

   What is the value stored in Port 1? Please, explain your calculations. (Half of the credit for this question will be given based on the quality of the explanation.)

5. (5 points) Approximately what percentage of major software projects (say, involving 10 or more full-time developers) is delivered on time, and on budget? Why? (5 points)

6. (5 points) What are the key differences between analog and digital information? What are the two most relevant ones for understanding industry transformation?

7. (10 points) If you are head of manufacturing at a company and are required to install an ERP (the decision is taken):

    a) Name the phases of the project with a one line description for each
    b) Name the people and organizations you would involve
    c) Describe what are the three top yellow flags you would be looking for (one sentence each)

8. (5 points) Before embarking on an IT manufacturing cost reduction process (such as the one Stanley Stanzyk leads at Intel) you will make sure you understand what is the forecasted ROI. True or false? Please justify your answer.

9. (5 points) Why is computer vision not more widely used in manufacturing and robotics?

10. (5 points) How can RFIDs impact manufacturing?

11. (20 points) Why is it hard to build information technology for a marketplace so that the IT functionalities developed add value to the steel industry players?

12. (20 points) Rod Brooks painted a very bright future for Robots.

    a) Do you agree with his vision? True or false (please explain your answer)
    b) How will they impact manufacturing?
    c) How will you make sure that you are up to date with robotics technology so that you are the first one to realize there is potential to apply it within your manufacturing responsibilities?

13. (25 points) Remember that we merged the Personal Agenda assignment with the final. Here is the personal agenda question inspired on the original assignment. It builds to a certain extent on the previous question.

    a) How will you keep up to date with developments in information technology?

    b) What will you do if you feel there is a business issue that relates to technology and you feel you need to drill down into some technology specifics that you do not understand?