Mid-Semester Examination -- Spring 2004.
406030 Information Systems Design

February 23rd, 2004.   **Max. Marks = 90.**

Clearly mention any reasonable assumptions you make.

1. Consider the following situation.

The state Government hospitals, which treat patients for free, need to be managed better. The budget for the hospitals is limited though profit is not a motive.

One problem is rather poor management of inventory of medicines. In the big district hospitals, some essential medicines are found to be out of stock while others, which are not important, get wasted because of huge stocks. Currently all medicines are procured centrally by the health department. The procurement process is very slow and often the department does not know the exact requirements of different medicines. The budget for medicines being limited, not all medicines can be stocked in more than adequate quantity.

The number of beds being inadequate, quite often, patients who are coming from distant places being referred by secondary or tertiary hospitals are refused admissions in the district hospitals. One reason for the large number of referrals is the lack of experts in smaller hospitals. If expert advice were available there, this could be avoided.

Another area that needs improvement is the clinical information about patients who are sometimes examined by different doctors at different times because of the duty pattern. General hospital management is also a problem.

The state Government is planning to implement an information system to handle the above situation. Assuming that you belong to an organization that develops information systems, answer the following questions: **[3+2+5+18+8=36]**

   (a) Estimate the number of function points for software development.
   (b) How much money will you quote to develop the information system?
   (c) Assume that you charge 20% of the total amount as advance and have three customer deliverables, namely, SRS, SDD and Final Code. If you charge 20%, 30% and 50% respectively for the three deliverables and also adjust advance by the same percentages, prepare a payment schedule you need to include in your contract document.
   (d) Develop an SRS including Context Diagram, DFDs and Process Specifications of the Software that you need to build as part of the information system.
   (e) Assuming that you are the project software manager for the IS project, develop a risk management plan for this project.

2. Answer whether the following statements are true or false. Give a one-line reason for your answer. Each correct answer carries 2 (1+1) marks. For each wrong answer, you will lose 1 mark.

[2+2+2+2+2+2+2=14]

(a) If defect prevention activities are carried out in an IS project, Defects Per Person Month (DPPM) can cross the Upper Control Limit of the organization's Capability Baseline for DPPM.

(b) To make a peer review more effective, project software managers from other projects are often included in the review.

(c) To make an internal audit more effective, the internal auditor interviews not only the project software manager but also other members of the project team.

(d) Internal audit of a project need not necessarily be done before the release of each deliverable.

(e) All product releases should be made from the controlled state and not from the static state of configuration management to ensure that only the latest items are released.

(f) All peer reviews must be carried out from the dynamic state of configuration management to ensure that the latest items are reviewed.

(g) A Quality Reviewer checks if the correct process is being followed in a project while an Internal Auditor checks the final product being released from the project.

3. Answer the following questions with respect to an Information System Project.

[2+2+5+3+10+5+3=30]

(a) What is the difference between a Defect and a Problem?

(b) What is the difference between a Defect and a Non-Conformance?

(c) How can you measure Defect Leakage in an Information System Project?

(d) What are the stages of an IS project in which (re-)estimation is done?

(e) Design an Internal Audit Checklist for auditing IS projects. Identify at least five sections and five related questions in each section.

(f) Develop a Role Vs. Skills matrix for an effective quality process for IS Design.

(g) How do you calculate productivity metrics for an IS project?

4. Answer the following questions with respect to the Information System project you are working on as part of the course. Each correct answer carries 2 marks. For each wrong answer, you will lose 1 mark.

[2+2+2+2+2=10]

(a) Name the person who is responsible for organizing peer reviews in your project.

(b) Name the person who is responsible for checking if there are any non-conformances to the process you are supposed to follow in the project.

(c) Name the person who approves tailoring of processes to suit the specific requirements of your project.

(d) Name the person who should have the authority to move configurable items from the controlled state to the static state.

(e) What are your project deliverables and whom should these be delivered to?