**Institute of Systems Science**

**National University of Singapore**

**MASTER OF TECHNOLOGY IN   
SOFTWARE ENGINEERING AND KNOWLEDGE ENGINEERING**

**Elective Examinations**

**Subject: *Managing IT Outsourcing and Subcontracting***

**Sample Examination Questions**

**SECTION A**

**Question 1** *(Total: 30 Marks)*

Read the case study description on the next page and then answer the following questions:

1. You are going to ask for proposals for work in each of these areas from different groups of contractors. Although you will evaluate all areas of the proposal, you know that you will also focus attention on specific areas of these proposals that will relate to specific features of the situations described above. In particular you must:
2. Determine the evaluation criteria for the proposals in the **Work Area 1** that will require *special* attention and justify why you should focus on these criteria.

*(8 Marks)*

1. Determine the evaluation criteria for the proposals in the **Work Area 2** that will require *special* attention and justify why you should focus on these criteria.

*(8 Marks)*

1. Suppose you are now negotiating contracts with two separate contractors to perform the work identified for Work Areas 1 and 2:
2. Briefly describe the clauses/sections you would insert/emphasize in the outsourcing contract for **Work Area 1** that would address the specific requirements identified above in part a (i) [if appropriate]?

*(7 Marks)*

1. Briefly describe the clauses/sections you would insert/emphasize in the outsourcing contract for **Work Area 2** that would address the specific requirements identified above in part a (ii) [if appropriate]?

*(7 Marks)*

**The Associated Overseas Bank (AOB) Case Study**

You are the manager of the IT department of the *Associated Overseas Bank* (AOB) which is one of Singapore’s leading Banks. You are currently considering outsourcing or subcontracting two areas of work to outside contractors, namely:

**Work Area 1:**

Operation and maintenance of the TRX1 IT network that supports the ATM machines distributed around Singapore that serve the banks customers. The TRX1 network consists of:

* Embedded processing and communication software running on the ATM terminals.
* The network itself with routers and other hardware and associated software that facilitate the flow of data.
* A set of mid-range computers that store and process transaction data.
* Links to other AOB in-house IT systems and also links to other banks/financial institutions. This network has been in place for several years and the basic architecture is well established. However, the network may be incrementally upgraded and enhanced to meet increased customer traffic. It is currently being considered as a target for outsourcing as it is felt that external organizations may run this more efficiently and at lower cost than is currently being achieved.

**Work Area 2:**

Development of a suite of advanced software programs that would assist in investment analysis by the Bank’s stock-broking department. These programs would be used by individual share dealers/investment managers to aid decision making on whether to buy individual stocks and shares, and in building up portfolios of stocks and shares that could be recommended to individual customers. These portfolios could be either “high-risk” or “low-risk”. Currently, much of this analysis is done by managers or stockbrokers using their experience and judgment. It is expected that the applications to be developed will be knowledge-based or use some expert system techniques.

**SECTION B**

**Question 2** *(6 Marks)*

The management of ***ASBC*** has decided to outsource the development of their Booking System to company ***Y***. ***ASBC*** has also agreed to pay company ***Y*** for this work. Subsequently, company ***Y*** sub-contracted this project work to company ***Z*** based in Singapore.

Advise ***ASBC*** on who owns the copyrights of the project products, when considered under the Singapore intellectual property laws.

**Question 3** *(Total: 14 Marks)*

On 1st April 2011, the ***Bukit Batok Nature Society*** passed a resolution to carry out a complete survey of all the flora and fauna in the Bukit Batok Nature Park. Jeremy Parton, a renowned zoologist and Lim Boon Seng, a local botanist were hired by the Society to work on the survey. They were to be paid the sum of $65,000 each for this project, which was to be completed by 1st July 2011.

As the task was laborious and as the data collected was potentially massive, Parton and Lim sought the assistance of Linda Cheng of ***Pandora’s Box Pte Ltd*** to provide a software solution for cataloguing the information that they would eventually collect. Linda Cheng promised Parton and Lim that the existing ***Cata-tombII*** software was more than capable of handling the task spelled out by them. Based on this promise, Parton and Lim sent a letter to ***Pandora’s Box Pte Ltd*** on 3rd May 2011 stating that they were willing to purchase the ***Cata-tombII*** software inclusive of the training and implementation associated with the software.

Between 15th May 2011 and 30th June 2011, Parton and Lim continuously entered the various data that they collected into the ***Cata-tombII*** software. On 30th June 2011, Parton decided to do a random check on the classifications assigned by the software. He was shocked to find that there were numerous errors in the classification of the plant species and to compound matters the software’s final tally of discovered species was 1,087 when in fact Parton and Lim’s combined tally as at that date was only 785 based on a manual count of their handwritten data.

***Bukit Batok Nature Society*** has now refused to pay Parton and Lim.

Discuss the following issues:

1. What is the legal significance of Linda’s statement that the ***Cata-tombII*** software was capable of handling the required task? Would ***Pandora’s Box*** be liable for failing to fulfil Linda’s promise?

*(7 Marks)*

1. What types of *loss* would be suffered by Parton and Lim, and can they claim for those losses from ***Pandora’s Box Pte Ltd***?

*(7 Marks)*

**SECTION C**

**Question 4** *(Total: 20 Marks)*

Read the description of ***Top Flyer Pte Ltd*** on page 8. Examine the situation carefully and then propose recommendations with justifications for the following:

1. Identify **four** applications/services discussed in the case study, and select the appropriate applications/services from those you have identified to outsource. Illustrate all the steps that you took in the selection process by using appropriate diagrams and tables. List any assumptions that you have made.

*(8 Marks)*

1. Prepare a report, using the format given below, for the **four** application/services identified in part (a). You may combine those with a similar recommended approach into one report if you wish.

*(8 Marks)*

**IT Outsourcing Recommendation Report**

Application(s): *(ie: the name of the application(s) or activity)*

Recommended Approach: *(ie: contract-out, buy-in, etc)*

Reason: *(ie: the reason for your recommendation)*

Potential Benefits:

Potential Problems/Risks:

Remarks:

1. Application Service Providers (ASPs) are blazing the way for the outsourcing market. This is the trend where an emerging class of service providers are offering companies the option of renting applications which run off-site at the hosting provider’s data center that are accessible via dedicated leased lines or over the internet through a browser. The monthly fee, which varies depending on specific requirements of the installation and the number of users, covers the hardware, software and the network infrastructure to run the systems along with the personnel and consulting support for management, configuration and maintenance.

Top Flyer management are also very keen to look into this as they have heard about the 35% cost savings achieved by its rival company using some of the services provided by one of the ASP vendors.

Identify the **two** most significant risks or legal issues that may arise in connection with ASP-type of services. Justify your answer.

*(4 Marks)*

**Description of Top Flyer Pte Ltd**

The Chief Executive Officer (CEO) of ***Top Flyer Pte Ltd*** worked hard to make his company one of the world’s largest express package delivery service providers. Its competitors are companies like Federal Express, DHL and UPS. His primary strategy for accomplishing this goal was growth through acquisition. In 2010, for example, Top Flyer acquired two companies. Through such an aggressive acquisition programme, Top Flyer revenues doubled between 2010 to 2011. Top Flyer, a registered company in Singapore, has more than 5,000 employees worldwide providing package delivery services of more than half a million items in 50 countries each working day.

However, the acquisitions made excessive demands on Top Flyer’s IT staff. They were expected to integrate the new companies into their existing systems with few additional resources. Senior management became very dissatisfied with the level of service provided by the IT department. Recently, they fired their Manager of IT Systems and hired Peter as his replacement.

Peter has discovered that the IT department is ill-equipped to handle Top Flyer’s information processing needs. The IT department is under-staffed. The 100 staff are poorly trained and possess only remedial technical skills. The data processing centre runs antiquated hardware and the mainframe requires an immediate upgrade since it is already running at full capacity. There are applications systems such as the financial, sales analysis, booking and package tracking systems running on it. These applications are largely written in a mixture of COBOL and 4GL languages accessing an ORACLE database. The current Sales Analysis System only provides sales reports based on historical data. Information required by the marketing staff to analyse customer trends and to forecast future trends are not readily available, leading to a loss of competitive advantage. The IT department generally takes at least one month to generate such reports.

The market place today is marked by fierce competition. The CEO would like to see more IT-enabled services implemented to gain greater operational efficiency and competitive advantage. One of the systems he has requested is a new enterprise-wide vehicle tracking system that would allow Top Flyer to track and manage their fleet in real time, 24x7. This system should enable the user to monitor the fleet *on the go* using native mobile apps for Android and iOS devices. It would be linked to street directories and track the fleet around the world.

Peter would also like to take this opportunity to exploit new technology and application architectures that would bring his people and company to greater heights. However, he wonders how he is going to do this when his senior management don’t want him to hire additional permanent staff to meet such short-term needs.

Peter has heard about outsourcing in his previous job. However, he does not know how to go about selecting what to outsource and thereafter justifying to his CEO. You are hired as a consultant to advise Peter on the outsourcing strategy for his department.