THE HONG KONG POLYTECHNIC UNIVERSITY

DEPARTMENT OF COMPUTING

EXAMINATION

Course : MSc Scheme - 61030

Subject : COMP5138 Service Science Management

Group : 381

Session : 2009 / 2010 Semester III

Date : 28 July 2010 Time : 18:30-21:30

Time Allowed: 3 Hours Subject Lecturer: Eric Chu / Franklin Leung

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This question paper has 3 pages.

Instructions to Candidates:

This is a closed book examination.
There are totally **4** questions. You have to answer all FOUR questions.
Please provide all your answers in the answer book.

Do not turn this page until you are told to do so!

Question 1 (30 marks)

1. Service quality represents one of the key concepts in services management study. Discuss the following questions in light of different service quality theories :
   a. Describe the measurement of service quality in terms of the disconfirmation approach and explain the factors that would affect the disconfirmation process (8%);
   b. Evaluate how the disconfirmation measurement is represented within the Gaps Model of Service Quality and briefly explain how management could make use of such measurement on service improvements (6%);
   c. Compare service quality in general (Servqual) and online service quality (E-S-Qual) in terms of measurement dimensions and application in different service environment (8%);
   d. Discuss the role of service quality in one of the technology adoption models (8%).

Question 2 (20 marks)

2. Six Sigma has been commonly adopted by major manufacturing industries in continuous quality improvements and Six Sigma in service industries are emerging recently. Examine the Six Sigma method in the following questions :

   a. Explain the key differences of the Six Sigma methodology as compare to traditional quality management techniques such as statistical process control and total quality management (6%);
   b. Briefly describe the DMAIC approach and operational tools applied in each of the Six Sigma stages. Illustrate two of the tools along the Define stage with examples (8%);
   c. Compare and contrast the Six Sigma Method with the Gaps Model of Service Quality in services quality improvement approaches (6%).

Question 3 (25 marks)

3.1 In the SSME (Services Science, Management and Engineering) discipline, what are the main challenges faced by service scientists in modeling, designing and improving IT services? Give an example to illustrate your answer. (9%)

3.2 Regarding IT Services Continuity Management,

   a. Describe briefly the five service design aspects in ITIL (i.e. service solutions, service management systems, technology architecture, processes, measurements) and outline the steps you will undertake when designing the Service Level Management. (9%)
   b. Describe any four delivery model options specified in ITIL. List the pros and cons for such options. (7%)

Question 4 (25 marks)

4.1 For the issues listed below,

I. Classify them with respect to the four ITIL Service Management Processes: Service strategy, service design, service operation, service transition .

II. Further indicate the classified sub-processes such as incident management, problem management, availability management, change management etc.

III. Describe briefly the recommended actions to address the issues

List of issues:

a. All the cost of application development and IT infrastructure services (network, storage etc.) are charged back to the users. However, the users complain that the charging scheme for shared infrastructure services is unfair as the services are shared by many departments.

b. The users complain that the service level as specified in Service Level Agreement is not met. However, the Service Level Manager claims that he is the coordinator only. The services are actually provided by a number of internal technical support teams and an external vendor which are not under his/her supervision.

c. An engineer has access to production system and can make changes whenever necessary. The engineer records all changes in a log.

d. All the computer asset and configuration information are recorded in an Excel spreadsheet. Any engineers making any changes to configuration or install new computer systems are required to inform of the administrator of such changes. However, occasionally, it is found that the information recorded in the spreadsheet is not accurate.

e. The IT staff complain that they often lack the skills to do some ad-hoc large-scale projects and the resources available are limited.

f. Heads of business units complain that some of their projects are not placed under higher priority as they have requested. The Head of IT department explains that , since there are limited resources within the IT department, they are forced to prioritize the projects according to the request submission date in case both projects are of the same priority.

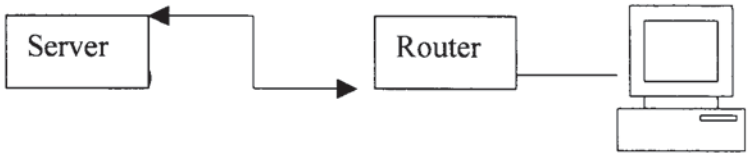
g. Some systems turn out to have slow performance occasionally. Once a system begins to slow down, usually it becomes slower and slower until the users complain to help desk. However, by the time the users have reported the problem, the problem has already become very serious and IT support staff have to carry out fire-fighting immediately.

h. The capacity manager in the IT department projects the computing power (CPU) requirement in the coming year using a linear projection based on the CPU usage level in the past three years.

i. The mainframe computer is used by a majority of the users and its availability as reported by IT department is 99.9%. However, the users regard that the system availability should be much lower than 99.9% as sometimes they just cannot login to the system (probably due to the network problem).

(18% for all nine sub-items, 2% for each sub-item)

4.2 Referring to the scenario below with the availability of individual components expressed in percentage,



97% (Server) 99% (WAN network) 95% (Router) workstation

If the user requires >98% overall availability and the additional costs for setting high availability configuration (i.e primary with one additional standby machine) are listed as below:

High availability configuration for server: 100,000
High availability configuration for network: 150,000
High availability configuration for router: 50,000

What is the most cost effective configuration meeting the required availability requirement and what is the cost to set up such configuration? Show your calculations to support your answers. (7%)

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